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COMPUTERWORLD

AIX upgrade pace to slow

IBM move aimed at ending tape avalanche

BY JOHANNA AMBROSIO and PATRICIA KEEFE
CW STAFF

WHITE PLAINS, N.Y. — IBM will soon address users' gripes about having too many updates of the AIX operating system, according to an IBM executive.

In the past 18 months, IBM has sent out half a dozen releases and maintenance-level fixes for AIX, a situation that some users said has caused version-control problems.

"There has been a customer concern with the frequency," acknowledged Linda Ryan, IBM's director of AIX and advanced workstation marketing.

Hitting the books

Nancy Costa, applications support manager for scientific and engineering systems at J. M. Huber in Edison, N.J., said the frequent updates mean "you've got to study every tape you get" to see how it might affect existing applications. "It's becoming difficult to manage. One of the things we're concerned about is the frequency of updates and how stable they are."

Another user complained that, in his case, the fixes have been major and have often come with bugs.

Ryan said IBM will address concerns such as Costa's by reducing the releases sent out to customers with something called the "selective fix capability."

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Users win in DEC/dealer war

Effort to undermine used equipment sellers creates VAX bargains

BY MARYFRAN JOHNSON
CW STAFF

Like a barrel over a waterfall, the value of used Digital Equipment Corp. midrange VAXs has plunged so fast in the past three months that DEC resellers are scrambling to lighten their inventory loads.

Users can reel in incredible bargains these days, according to industry analysts. A used VAX 6000 Model 420 that sold for $225,000 in June is now red-tagged at about $150,000, resellers said.

Yet customers upgrading their current machines on the secondary market should be ready to pay premium prices to DEC for the mandatory operating system upgrade.

Disincentive

New DEC premiums on VMS upgrades make it more expensive for users to upgrade their hardware on the third-party market

Upgrade	Unlimited VMS license upgrade: Base price differential	Premium price
Microvax 3800 to VAX 4000-200	$0	$12,400
VAX 8530 to VAX 8550	$12,600	$22,800
VAX 6000-410 to VAX 6000-420	$21,300	$30,000

CW Chart: Janell Genovese — Source: Technology Investment Strategies Corp.

DEC recently posted VMS license upgrade prices on its Electronic Store that showed hefty premiums added to the licensing charge to move from one VAX platform to another (see chart).

DEC is aggressively moving to stanch the flow of lost profits to the secondary market by discouraging its customers from dealing there, analysts and

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Oracle plans major rewrite of SQL*Net

BY JEAN S. BOZMAN
CW STAFF

Oracle Corp. is in the final stages of a major rewrite of its SQL*Net communications networking software, according to Oracle users and industry analysts. The new version will reportedly boost network performance, especially for client/server applications, and will provide a sturdier base for distributed database features expected to be provided by the forthcoming Oracle Version 7.0.

A product announcement could come as early as next month, users and analysts said. It would be the first major revision for 5-year-old SQL*Net, which is used by about half of Oracle's installed base.

The rewrite amounts to a top-to-bottom revision of the SQL*Net code, originally written, by Oracle programmers to handle protocol conversions across networks. In the future, network directory services and remote procedure call software could be added to the revised SQL*Net code, analysts said.

Most observers said they expect the announcement soon but were unable to give a precise date, partly because the new

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Ferret lovers unite — and download

BY CHRISTOPHER LINDQUIST
CW STAFF

Want to meet people who share your interest in raising ferrets? Just spotted a dodo bird in Kansas and want to know where to report it? If you have a personal computer and modem, chances are good that there is an electronic bulletin board service for you whatever your interests are.

Special interest bulletin boards, the "electronic clubhouses" that can be tapped by anyone with a computer and modem, are proliferating as PC prices and telecommunications costs fall. In fact, a recent study by *Boardwatch Magazine* found nearly 30,000 public-access electronic bulletin boards in the U.S. That number compares with only 14,000 such systems the magazine found last year.

"The number of cockatiel enthusiasts in Boulder is relatively small, but they do run a [board] up there about cockatiels and exotic birds," said Jack Rickard, editor and publisher of *Boardwatch* in Littleton, Colo. "And anyone in the country, without a whole lot of hindrance in geography, can dial in to this system and participate in a forum of people who have similar interests."

Bulletin board system operators, or sysops,

Continued on page 88

Errant EDI sparks vendor action

BY ELISABETH HORWITT
CW STAFF

Customer complaints of delayed and misplaced messages have spurred electronic data interchange service providers to finally implement reliability standards on the gateways used to exchange EDI documents between different services.

At a meeting of the American National Standards Institute X12 Task Group held last week, 12 value-added network (VAN) companies committed to implement the ANSI Interconnect Mailbag Control Structures, a standard designed to ensure secure and reliable transfers of EDI messages between carriers.

All of the major EDI service providers were present at this meeting with the exception of Transettlements, Inc.

The need for more interconnection reliability has burgeoned over the last couple of years as EDI customers expand their connections to users on other VANs, according to Victor Wheatman, program director of intereenterprise systems at Gartner Group, Inc.

For example, messages that involve another VAN make up more than 20% of the traffic handled by AT&T's EDI service, according to AT&T EDI business manager Gary Dalton. Other carriers are involved in 15% of the 100,000 EDI message exchanges handled by BT America, Inc.

However, the interconnections used by VANs to exchange EDI messages have amounted to little more than "basically dial in, dump and pray," Wheatman said. When users complain, they

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INSIDE

Companies that do business in Europe are finding that systems unification is a must. See Adventures In The New Europe, after page 46.

IN THIS ISSUE

The 5th Wave

"IT WAS CLASHING WITH THE SOUTHWESTERN MOTIF."

EXECUTIVE BRIEFING

■ **DEC customers will find bargain-basement prices** on the used market as resellers unload their inventories of recently devalued systems. However, some of that windfall could be lost because of DEC's VMS upgrade charges. Resellers say DEC has recently been charging premium prices for operating system upgrades on used equipment as a way to discourage customers from shopping on the secondary market. **Page 1.**

■ **Sensitivity to sociological and cultural issues** is important for IS managers who want to create a successful software measurement program. Staffers will likely feel dismay and apprehension at the prospect of such scrutiny. What IS chiefs must convey is that the measurement program is not a punitive weapon but a way to identify problems and point out strengths. **Page 61.**

■ **Apple Computer makes another pitch to corporate users** by announcing a licensing deal with Computer Associates that will eventually give Macintosh users access to the CA mainframe database and applications. **Page 8.**

■ **Banking IS executives search for ways to manage operations** in a consolidating industry in which money is scarce and systems are frequently overautomated. The key strategies they've developed include financing projects that will provide a competitive edge, managing system costs by downsizing and standardizing on fewer applications. **Page 4.**

■ **IBM's AIX users want the company to shift to a lower gear** when it comes to shipping updates of this Unix operating system. The half-dozen releases and fixes shipped since early last year are causing version control problems, they say. **Page 1.**

■ **Few U.S. computer companies** are taking another look at business opportunities in South Africa, even though some federal trade sanctions were recently removed. Several firms note that the return on indirect investments in South Africa is not substantial enough to compel them to re-establish old ties. **Page 65.**

■ **IBM Application System/400 users** are not so impressed with the company's push for an open AS/400. Instead of openness, they say, they care more about traditional issues: better performance and more capacity. **Page 23.**

■ **Financial know-how,** coupled with a well-grounded understanding of a company's way of doing business, often takes precedence over technical skills, according to some IS executives. **Page 73.**

■ **Large-systems users support IBM's idea** for a data warehouse that will manage corporatewide data access, but some are confused about how the company will make the concept a reality. **Page 4.**

■ **Leasing systems successfully takes careful planning,** close attention to the contract on the part of IS managers as well as frequent updates. **Page 80.**

■ **Local-area network switches are emerging as one way to bring relief** to clogged networks. The switches can create a virtual path between two nodes on a LAN. **Page 43.**

■ **On site this week:** Laptops turn low-performing sales representatives into top-notch staff members at Bridgestone Tire. **Page 35.** Albright and Wilson Americas install a gateway between IBM and DEC equipment to give users easier access to both commercial and engineering data. **Page 43.** Canadian Airlines puts together a frequent-flier system in less than a year by using an existing software template and computer-aided software engineering tools. **Page 23.** National Westminster Bancorp plans to maintain its IBM and Wang environment and says it does not foresee any major hassles from the recently announced alliance of its two vendors. **Page 25.**

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Data warehouse concept OK, users waiting for reality check

ANALYSIS

BY ROSEMARY HAMILTON
CW STAFF

Several IBM large-systems customers and industry consultants are bullish on the data warehouse concept the company is expected to announce next month [CW, Aug. 5]. However, they are also uncertain how this concept will become reality in a timely fashion.

"I think they might come out with a statement in September that it might take years to fulfill," said Howard Foedick, president of Foedick Consulting, Inc. and former president of the International DB2 User Group.

Data warehouse, the informal name used to describe the new strategy, is intended to provide users with an architecture and tools to oversee the distribution of corporatewide data to end users. Earlier this year, IBM positioned it as a step beyond distributed relational databases.

Users said that while the details are unclear, the concept would address a serious concern they have faced for a long time: how to get more data to users while keeping the flow of information under control.

"I don't understand exactly how IBM will implement it," said Dick Stromberg, a consultant in the informations systems department at Du Pont Co. "We are on board with the concept. But the physical implementation is the hurdle to get over now."

For IBM to actually achieve this objective will be far more difficult than promoting the concept. The data warehouse crosses a number of IS issues.

It would also require some level of management or a central point of control to ensure that the architecture IBM has defined is properly implemented and maintained.

Users and analysts said they expect IBM to unveil the data warehouse as the latest component under Systems Application Architecture. As such, it will likely be positioned as a long-term initiative that will consist of an IBM architecture and some key IBM products.

No grand plan

However, one observer said IBM intends to position the warehouse to fit various IBM user environments instead of announcing one grand plan.

"They've been learning from the AD/Cycle experience that you can't just put out a vision and expect people to buy components," said Paul Hessinger, director of research at Munich, Germany-based Softlabs and former chief technology officer at Computer Task Group.

Consultants are speculating that a number of existing products will be positioned under the data warehouse banner. For users of larger systems, DB2 will likely serve as a way station, or temporary storage facility, for end-user data extracted from corporate databases, consultants said.

With SQL-based front-end tools, users could then tap into the DB2 way station and pull out information. Consultants are predicting that Information Builders, Inc.'s Focnet data access system will play a key role.

A number of IBM and third-party tools will be required to extract data and move it into the way station, observers said. IBM's recently announced Data Propagator, which pulls data out of IMS and loads it into DB2, would likely be one of those tools, Hessinger said.

At a future date, IBM would likely position its Repository Manager software as one mechanism to control the architectural information on the warehouse, some consultants said.

IBM's Distributed Relational Database Architecture will be a piece of the foundation, observers said. It contains the protocols and specifications necessary for IBM databases to function in a distributed environment.

Banks invest in IS despite cutbacks

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — To justify continued technology investments in a tightfisted and overautomated banking industry, information systems executives are seeking more efficient ways of managing their computing resources, according to survey results released last week by consulting firm Ernst & Young.

Top IS executives interviewed by *Computerworld* corroborated the study's findings. They said that despite consolidation trends and a glut of on-line services in the industry, bank IS departments must forge ahead with investments they believe will strengthen their businesses.

The survey respondents said they are looking to finance new projects needed to stay competitive by controlling costs through downsizing, standardizing on fewer applications and consolidating networks (see chart).

"You have to stay aggressive while justifying costs," acknowledged Arthur Claudio, first vice president of data processing, U.S.A., at the Caisse Nationale de Credit Agricole, a Paris-based bank. "You can't just sit there and stay status quo because you might merge. Your performance continues to be measured for what it is today."

Too much power

The survey of 57 large U.S. banks, conducted for trade publication *American Banker*, revealed a surplus of computing capacity in the banking industry that has not yet paid off because of a saturated consumer market, said Greg Schmergel, an Ernst & Young consultant.

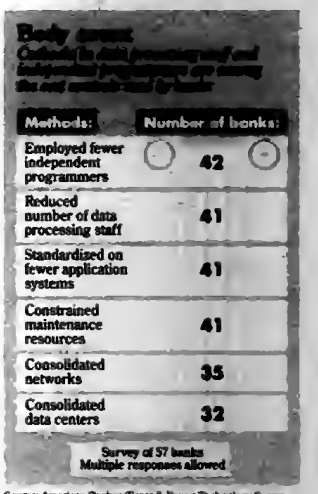
"Banks invested heavily in technology because they thought it would let them process each transaction at a lower cost. For that to be profitable, however, banks need to get their transaction volume up," Schmergel said.

"We must find creative ways to solve this dilemma because we're still going to make big technology investments," said Jim Wegmann, senior vice president of corporate electronic data processing at $6 billion Talman Home Federal Savings & Loan Association of Illinois in Chicago. One way Talman is controlling costs, Wegmann said, is via a "partnership" approach with vendors.

Talman Home Federal, he said, has assembled a group of vendors as business partners to design, develop and roll out unique products and services that yield a "lower blended unit and production cost."

"We're managing tighter than we were a year or two ago so we can do more with less," said Martin Bronstein, senior vice president of systems development at the First National Bank of Chicago.

Despite efforts to manage more tightly, technology investment growth in the industry has slowed to about 2% per year, down significantly from 10% to 15% a few years ago, according to Ernst & Young. Many new investments will be in equipment aimed at allowing the companies to ultimately save money in head count and operations.



Source: American Banker/Ernst & Young Technology Survey

The Ernst & Young study showed banking trends away from outsourcing and distributed processing. One possible reason behind the anti-outsourcing sentiment is that such contracts typically represent an eight-year commitment, said M. Arthur Gillis, president of Computer Based Solutions, Inc., a New Orleans banking systems consultancy.

Only 2% of Ernst & Young's survey respondents said they are using distributed processing as a method of controlling costs.

"Putting applications on personal computers is the last thing we'd consider from a control and security standpoint," Claudio said, adding, "With the big machines, it is easier to upgrade code, control and keep secure."

Supersaturated?

The Ernst & Young survey measuring the banking industry's data processing capacity revealed the following:

- An estimated hardware/software value of $200 billion.
- Accumulation of 1 million pieces of computer information per capita. At the current pace, this will grow to 10 million by the year 2000.
- A one-to-one PC-to-employee ratio expected by 1995.
- Only eight of the 150 largest banking companies have outsourced data center operations.

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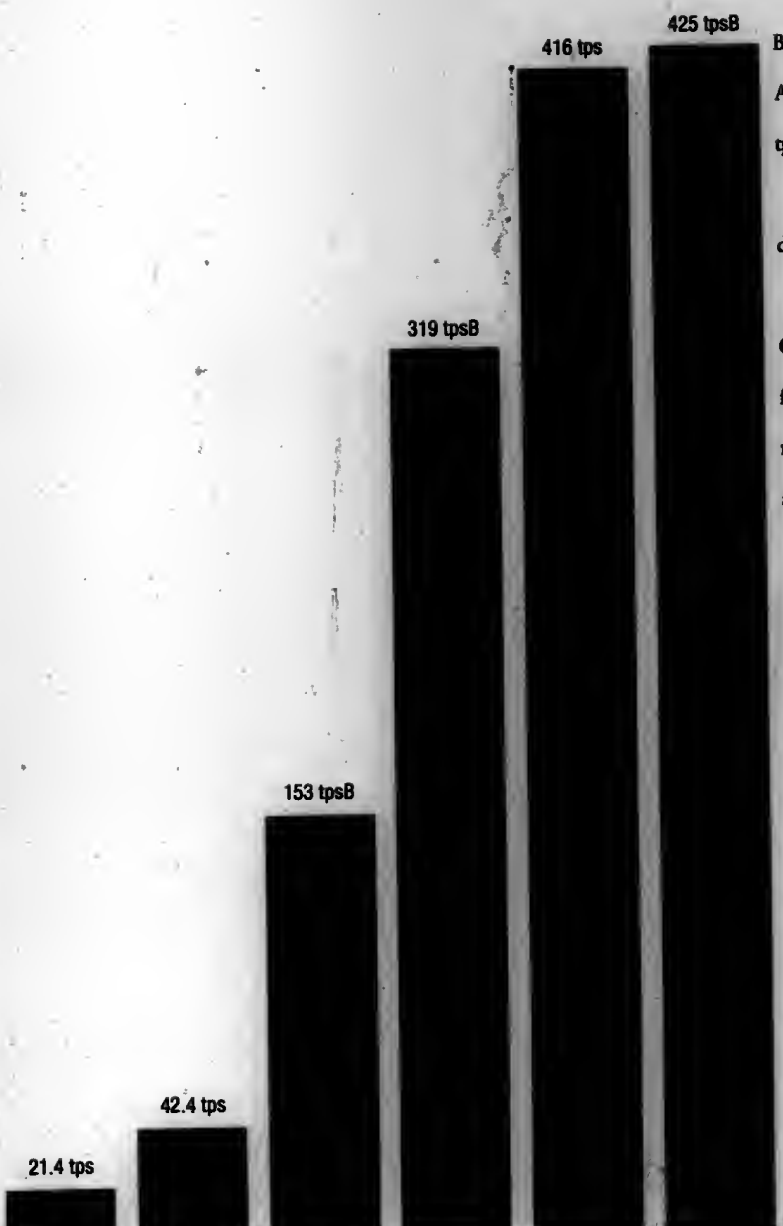

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NEWS SHORTS

Hybrid telephony examined

The North American Telecommunications Association, based in Washington, D.C., formed a membership council last week to focus on expanding the market for computer-integrated telephony products — those that link a customer's incoming telephone call to the company's database management system. The Alliance of Computer-Based Telephony Application Suppliers will have industry/user task forces and education programs covering such applications as customer service, sales automation and telemarketing, officials said.

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Bull adds systems integration group

Bull HN Information Systems, Inc. last week formed a systems integration business unit focusing on technologies such as personal computers, networks and open systems. Steve Gardner, former vice president of marketing at Bull, was named president of the unit.

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OS/2 Workbench gets new tool

IBM just keeps adding packages to its forthcoming OS/2 Programmers Workbench, which should be formally rolled out in its entirety next month, according to John Soyring, who coordinates IBM's third-party OS/2 developers' program. The latest addition to the Workbench, announced last week, targets large enterprises running Fortran. IBM announced an agreement with Waterloo, Ontario-based Watcom under which Watcom will develop and market OS/2 2.0 versions of 32-bit optimizing compilers for Fortran 77 and C.

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Bill would hit pirates

The U.S. Senate Judiciary Committee approved a bill that would impose criminal penalties for software copyright infringement. The bill would impose a fine of up to $250,000 and a prison term of up to two years for illegal reproduction or distribution of 11 to 49 software copies. Currently, first-time piracy is a misdemeanor. Meanwhile, the Software Publishers Association released results of a study showing 1990 piracy at an estimated $2.4 billion in the U.S., down from $2.5 billion in 1989 and $2.9 billion in 1988.

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Acer pares prices

Acer America Corp., a PC-compatible maker based in San Jose, Calif., brought out a new line of PCs and cut prices by as much as 29% on its older product line. Among the machines introduced last week is an entry-level multimedia box, the Acer 1125E, based on a 25-MHz Intel Corp. 80386DX chip. The basic model costs $1,995.

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Amdahl disks delayed

Amdahl Corp. said last week that shipments of its high-end 6390 disk drive would be delayed by about six weeks because of a need for additional testing. The move, which pushes first shipments from September to November, worsens Amdahl's late entry into the IBM 3390-compatible market. IBM has been shipping its 3390s since late 1989; Amdahl competitor Hitachi Data Systems Corp. in Santa Clara, Calif., started shipping its 7390s this year. "They didn't give any details. They just said it wasn't ready," said Robert Callery, a senior analyst at Technology Investment Strategies Corp.

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Job cuts at Siemens-Nixdorf

Germany's Siemens-Nixdorf Informationssysteme AG, a unit of Siemens AG, said last week that it will slash 3,000 of its 51,000 jobs as part of a program to save $341 million by the end of 1992. The firm said the cost-cutting plan was part of the second phase of the merger of Siemens' computer division and Nixdorf Computer AG, which Siemens rescued in 1989. On the domestic front, Siemens-Nixdorf announced a major contract win: Saks Fifth Avenue signed a contract to install Siemens-Nixdorf point-of-sale terminals, software and Targon minicomputers at 47 stores throughout the U.S.

More news shorts on page 87

Panel faults federal data models

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Congress makes billion-dollar decisions about tax and welfare legislation by relying on computerized "microsimulation" models. The problem is that the reliability of the models has not been validated, and they sometimes produce big errors, a National Research Council panel reported last week.

In 1981, for example, tax policy analysts misjudged the popularity of newly created individual retirement accounts, so their models grossly underestimated the revenue loss that the U.S. Treasury would endure because of the tax-free accounts. Other cost estimates have been way off because of the deteriorating quality of federal statistics, which are often outdated and incomplete, the study said.

The report blamed faulty data and assumptions used in the models rather than the computer programs themselves, although it stated the mainframe programs tended to be too sluggish, costly to run, poorly documented and hard to revise.

"There is very little done to assess the validity of the estimates, the amount of uncertainty in the estimates and the options for improving them," said the study leader, Eric A. Hanushek, a political economist and former official at the Congressional Budget Office.

Move from mainframes

In addition to recommending that the federal government stop skimping on model validation and statistics, the study said the next generation of models should be developed for desktop computers, not mainframes.

Policymakers seem to believe that the computer-generated estimates are error-free and rarely ask or are told about the uncertainties caused by faulty data and assumptions, the study said.

Microsimulation models are used by government offices, contractors and think tanks to simulate the effects of government programs on individual households. Typically, they are ultra-complex Fortran programs run in batch mode on IBM mainframes.

In the next few years, desktop computers will have enough processing power to handle the data-intensive models, the report said, and graphical user interfaces will make it easier for policy analysts to use, analyze and modify the models.

The report acknowledged that using desktop computers would put the models in the hands of more people and could lead to more errors and a proliferation of differing estimates, but it also said the benefits outweigh the risks. The personal computer-based models of the future will be more flexible, giving analysts the ability to evaluate the estimates, fine-tune the models and adapt them to new policy needs, it said.

With proper care and development, microsimulation models could play a major role in analyzing a variety of social policies, the study said, but some experts are skeptical. Computer models work fine for predicting the actions of machines and physical properties, but trying to predict the actions of ever-changing "human social systems" is futile, said Peter J. Denning, chairman of the computer science department at George Mason University in Fairfax, Va.

EDI

FROM PAGE 1

are often treated to a "finger-pointing exercise," he added.

JC Penney Co. has "definitely experienced reliability problems" while exchanging business documents with its thousand-or-so suppliers, who use a wide variety of EDI services, said John Markakis, a systems analyst at the retail giant. The gateways used for document purposes are "unstable and limited," he said.

Leaps and bounds

Companies such as JC Penney should experience a big leap in EDI interconnection reliability when major EDI providers start pilot-testing their Mailbag implementations, sometime in the next three to 12 months. The protocol specifies how a receiving network can notify the sending network that a message has been fielded and safely stored.

JC Penney is eager for its EDI providers — Sterling Software, Inc.'s Ordernet Services Division and GEIS — to implement Mailbag, according to Markakis. "Suppliers call us looking for data that we show we have delivered, or they are unaware that the data is out there for them to pick up," he said.

While such communication gaps are infrequent, they tend to happen during peak business volume, just when JC Penney needs the information the most, Markakis said. It can take days to track down the missing data, he added.

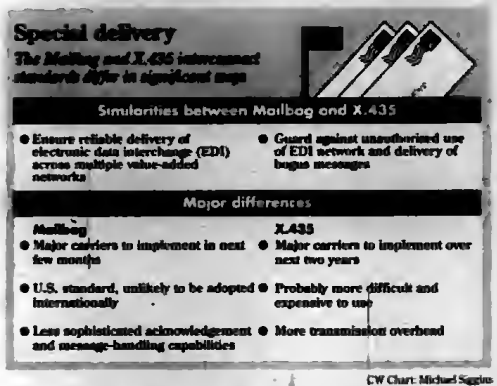
Cummins Engine Co. is also lobbying its EDI provider, Control Data Corp.'s Redinet, to implement Mailbag, primarily for security reasons.

The draft standard's user identification/password validation feature would ensure that "whatever we got via Redinet was from a valid sender, not just any sender," according to Anita Palmer, a systems analyst at Cummins.

In addition, the feature would help protect Cummins from system break-ins, a growing threat as the engineering firm's EDI connections expand, Palmer said.

Several VANs have indicated that they are implementing Mailbag only as a stopgap to satisfy users until they can put the more full-function, international X.435 standard in place.

Mailbag's comparative simplicity allows carriers to implement the protocol quickly, where it will take a couple of years for VANs to fully implement X.435, Wheatman said.



CW Chart: Michael Siggins

One issue that neither protocol resolves perfectly is how to track message delivery from one user's site to another. Mailbag tracks exchanges only between EDI carriers, not end users. X.435 can track an EDI message end to end as long as all parties use the CCITT X.400 electronic mail standard — which few users do for EDI. The ANSI task group is now considering a delivery/non-delivery notification protocol.

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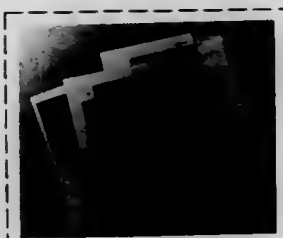

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Apple goes for corporate gold

Courtship of business users heats up with CA mainframe software pact

BY JAMES DALY
and CAROL HILDEBRAND
CW STAFF

BOSTON — Apple Computer, Inc. continued its aggressive pitch for the corporate customer at the Macworld Exposition last week, unveiling a licensing pact with Computer Associates International, Inc. designed to give Macintosh users access to CA mainframe database and applications software.

The announcement, along with Apple's relatively low-key appearance during the four-day event, indicates a shifting of gears at the biannual show. Once a gathering place for the technological counterculture, Macworld has become increasingly staid as Apple has used the event to woo the large customers it desperately needs in order to stem its hemorrhaging market share. Some research estimates have Apple's market share shrinking from 15% to 10% in the coming three years.

At last week's show, most product introductions came from third-party vendors (see story below). Besides the CA announcement, Apple officials consigned themselves to promoting System 7.0 and quietly showing off Quicktime, its multimedia extension to System 7.0.

The CA pact, however, could prove important to Apple's goal of penetrating the Fortune 500, according to Bob Puette, president of Apple USA. Under the terms of the agreement, CA has agreed to license Apple's Data Access Language (DAL), a connectivity language that provides users with interactive access to the information residing on a variety of servers and hosts.

CA plans to develop DAL server software for its database management systems as well as develop Macintosh-based client/server versions of its Masterpiece general ledger package.

These products should begin trickling out by the end of the year, with full availability expected by the middle of 1992, according to Kurt Seibert, CA's vice president of strategic business alliances.

Apple began licensing DAL to third-party developers in March and has signed agreements with Blyth Software to develop DAL for DOS, Microsoft Corp.'s Windows, OS/2 and Unix clients. Apple has also enlisted Novell, Inc., Tandem Computers, Inc., Data General Corp. and Pacer Software to develop DAL servers.

Apple officials were anxious to focus attention on System 7.0, the revamped operating system that Apple hopes will propel its hardware into major corporations. Nearly three months after System 7.0's introduction, products exploiting many of its features are beginning to arrive en masse.

A big draw, so to speak, at last week's Macworld was a prototype of Alias Research, Inc.'s Sketch, a free-form, three-dimensional drawing tool. Using a highly advanced form of mathematics, Sketch's tools let a user sketch and gesture freely in a 3-D atmosphere to create organic forms. Changes can be made using an eraser, and any point of any curve can be refined and manipulated in the 3-D environment. Curves always remain alive: Change one, and the entire surface is automatically updated. The $1,995 product is scheduled for beta-testing at the end of the month.

Macworld highlights System 7.0

Other products announced during the four-day show included the following:

- **Symantec Corp.** announced a System 7.0-compliant version of More, a suite of desktop applications incorporating word processing, presentation and outlining tools. It is priced at $395.
- **Adobe Systems, Inc.** highlighted System 7.0 compatibility with Photoshop 2.0, an image processing program allowing paint, prepress, color correction and darkroom systems for the Macintosh that was taken out for its first public airing. It costs $895.
- **Timeworks** upgraded to System 7.0 compatibility with its new release of Publish It Easy, which also adds database and mail-merge capabilities to the desktop publishing program.
- Three-dimensional capabilities were represented by **Spyglass, Inc.** Its new version of Dicer, data visualization software, allows automatic generation of 3-D and 4-D data sets.
- The spotlight was on color at the **Mitsubishi Electronics America, Inc.** booth, where its Information Systems Division introduced a family of color monitors and printers. Among the offerings was a 37-in. monitor that the firm claims is the largest high-resolution presentation monitor available today. It retails for $9,995.
- **Moldyn Technologies, Inc.** added the Ethernet Display System in a setup that combines Ethernet and large-screen video display capabilities on a single card. The Moldyn 030 Display System reportedly provides an inexpensive upgrade path for Macintosh Classic users.

Lotus agrees to adapt 1-2-3 for AIX users on RS/6000

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. announced plans last week to port its 1-2-3 spreadsheet to IBM's AIX-based RISC System/6000 product line. Delivery of the $695 program is slated for early 1992. The new release will support AIX Versions 3.1.5 and later, as well as concurrent licensing.

This is the latest in a series of agreements between IBM and Lotus that so far have spawned a version of 1-2-3 for MVS and a remarketing and technology access deal involving Lotus Notes and CC:Mail.

The pact also takes IBM closer to launching an assault on the low end of the workstation market, which overlaps with high-end personal computers in the business sector. IBM is expected to introduce its lowest priced workstation in the $6,000 to $8,000 bracket this September.

"All of IBM's competitors are taking a major run at the desktop at the high end of the PC world. IBM has to protect that ground," said David Rome, Lotus' director of Unix products.

The AIX port is also fueled by customer input, Rome said, adding that Lotus receives roughly 10 calls a week from users asking for a 1-2-3 port to AIX.

The version of 1-2-3 for AIX will be based on 1-2-3 Release 3.0, and it will use the same core code underlying Lotus' other Unix spreadsheets. The one major difference, Rome explained, is that Lotus will move that core code over to ANSI-standard C for IBM's AIX.

Furthermore, 1-2-3 for AIX will be able to talk to 1-2-3 for MVS by interchanging files over IBM communications links, Rome said.

AIX upgrade

FROM PAGE 1

Under the current system, tapes are sent every few months to customers to fix bugs and provide functional enhancements. With selective fix, tapes will address specific problems and will be sent only to users who request them.

General-maintenance tapes with new features or enhancements will be sent out approximately twice a year, according to Ryan.

"That will give customers more flexibility and more capability not to have to put on these maintenance releases as frequently," she said. "With selective fix, a customer can install an individual fix to his problem."

Ryan would not disclose a time frame in which selective fixes for AIX will become available but said it would likely begin with the next full release of the operating system. Industry sources said Release 3.2 will likely be introduced late this year.

Positive response

Users reacted positively to the proposed change. "That's what they should have done all along," said Rob Conrad, network administrator at Happy Harry's, a drugstore retail chain based in Newark, Del. Each of the chain's 25 stores has a RISC System/6000.

"It's been the upgrade-of-the-month club, so this is a real relief," Conrad said. "Two tapes a year is bearable." He said he stopped installing the tapes about two updates ago because they did not have any new features or fixes that he needed. However, he said, he will install Release 3.2 when it becomes available.

AIX 'n' pains

IBM has rolled out a series of AIX releases

January 1986	Initial AIX announced (for the RT PC).
February 1990	AIX (Version 3.0) relaunched. Shipped in June 1990 as Version 3.1.
September 1990	IBM indicates intent to support Next, Inc.'s Nextstep Release 2.0 in AIX Nextstep offering. No delivery date announced.
March 1991	AIX Version 3.1.5, a consolidation of four previous maintenance releases, ships.
July 1991	Enhanced AIX with Apple's Macintosh interface support announced. Delivery two to three years away.
[illegible]	AIX 3.2 expected.

CW Chart: Janell Genovese

User Russell Silverman, a quantitative-modeling analyst at Metropolitan Life Insurance Co. in New York, said IBM's plan "seems sensible." He also suggested that IBM "test a bit more first. Instead of putting out releases and then having to fix bugs, test to make sure the releases are as bug-free as possible."

IBM has had to issue many updates and releases of AIX to make up for past problems, according to Silverman and other users. Early versions of AIX had major weaknesses, including the propensity to cause system crashes.

IBM fixed many of the large faults when it released Version 3.1 in February 1990 but has since introduced subsequent releases to fix more minor bugs.

"If IBM has sent out a lot of releases, it's because they understand it's important to get AIX right," said Judith Hurwitz, vice president at Patricia Seybold's Office Computing Group in Boston.

"They've had their problems, but they're not twiddling their thumbs. They're very cognizant of the stakes here," she added.

Mainframe Current Events

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Businessland master key to JWP's plan

BY MICHAEL FITZGERALD
CW STAFF

PURCHASE, N.Y. — JWP, Inc.'s pending $32 million purchase of ailing reseller Businessland, Inc. is key to a long-term strategy for JWP, which currently derives more revenue from its technical services group than its reselling branch.

Ultimately, JWP intends to have its resellers — all of which will eventually focus on the corporate market — also sell JWP's facilities services, such as electrical systems or control systems, according to Harold D. Copperman, president of JWP Businessland, Inc., which is the name of the combined units.

"I think we can build some strategic relationships, do some cross-selling . . . and there's no reason why we couldn't reference and cross-sell other systems JWP offers, such as environmental or security systems," said Copperman, a longtime IBM employee who was most recently president of Commodore Business Machines, Inc.

In the meantime, JWP will begin the task of merging the two companies. Copperman said JWP intends to "do this with no customer disruption."

10% to 20% cut

JWP Businessland will have 3,500 employees, but between 350 and 700 of them will lose their jobs by Jan. 1, 1992. JWP said it expects to cut personnel largely from back-office and administrative functions, retaining most of the combined service and sales operations.

JWP has also said it will consolidate or close approximately 30 of the combined 100 sales and service offices.

According to a JWP spokesman, Copperman was chosen to head the integration in part because his history would preclude a bias toward either company, thus resulting in his keeping the best people.

JWP Businessland will be headquartered in Canton, Mass. Robert J. Crowell, currently chairman and chief executive officer of JWP's Computer Systems Group, will hold the same positions in the new company. Businessland founder and Chairman David Norman is expected to serve in an advisory capacity for one year.

Turnaround possible

Although Businessland is in financial trouble, at least one competitor expects the combined entity to become a formidable rival.

"They'll probably be all right; they seem to have a reasonable plan to do [the merger]," said William Tauscher, chairman of Computerland Corp., the nation's largest reseller, with nearly $3 billion in sales.

"There is no question that if they're successful [in merging operations], we'll be two titans slugging it out," he added.

Tauscher, whose company is still working through last March's estimated $150 million acquisition of Nynex Business Systems, Inc., failed in a late bid for Businessland last month, after what he said was a year's worth of discussions.

He predicted JWP's acquisition will spark a move toward more combinations of resellers.

Copperman did not rule out another purchase in the future but suggested such purchases would probably involve smaller companies in vertical markets.

Elsewhere last week, resellers Valcom, Inc. and Inacomp Computer Centers, Inc. finalized their merger, creating Inacom Corp., a company with nearly $1 billion in sales.

Chairman Rick Inatome said the two firms expected to complete their merger by the first quarter of 1992.

As far as other acquisitions are concerned, according to Bill Fairfield, president and CEO of the new company, "We'll leave [those] to Tauscher."

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HEWLETT PACKARD

Security pros looking for stamps of approval

BY MICHAEL ALEXANDER
CW STAFF

The second of two articles on recent developments in computer security.

A growing number of information systems security experts are calling for a seal of approval on their profession and eventually on secure software and hardware.

"I think that [security] is often thought of as a clerical function," said Sally Meglathery, director of information security at the New York Stock Exchange and a former president of the Information Systems Security Association (ISSA).

The experts think that to get the recognition and credibility they deserve, they must certify security's practitioners, whether they are in corporate IS or security consulting firms.

"It reflects the maturation of the profession," said Dain Gary, manager of information security at Mellon Bank NA in Pittsburgh. "It says something definite about [a candidate's] experience and knowledge."

In recent years, there has been a "phenemonal" increase in security awareness by senior managers, Gary said. Management recognizes too well the liabilities of failing to adequately protect a corporation's information, he noted.

"Senior level managers are looking for a defensible position in the event of a problem," said Richard C. Koenig, president and chairman of the board of the International Information Systems Security Certification Consortium, Inc. (ISC)² and a security consultant. "They want the assurance that the person responsible for security knows what he is doing."

(ISC)² was founded by members of six well-regarded trade groups, including ISSA, the Data Processing Management Association and the International Federation for Information Processing.

Aug. 31 marks the end of the first phase in the group's bid to certify IS security professionals. From March to the end of this month, (ISC)² waived its formal examination process for security professionals who meet certain criteria, such as time in the profession and areas of expertise.

Perhaps as many as 10,000 practitioners will be certified in the next few years, Koenig said. "We have been getting 15 applications a day as we approach the [phase one] deadline," Koenig said.

Starting in the first quarter of next year, security experts seeking certification will be required to take a lengthy examination that will test the candidates' expertise in computer security, business continuity planning, legal and regulatory issues, investigation, and several other related areas. There is a $250 fee to take the test.

The security experts said that the day products are formally evaluated and certified based on their security strengths is probably not far off.

The "Computers at Risk" report issued by the National Research Council earlier this year recommended establishing an IS security foundation that gives products a sort of security "*Good Housekeeping* Seal of Approval."

Some security practitioners already influence hardware and software purchases based on each product's security merits. "We're no longer looking at just price and performance but also how it fits into a security environment," Gary said.

Sun profit soars, competition looms

BY KIM S. NASH
CW STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. ended fiscal year 1991 with a bang last week when it reported a 71% jump in profits for the year and a sales increase of 31% compared with figures from a year ago. Revenue reached $3.2 billion for 1991, and net profits registered at $190.3 million.

Buyers snapped up Sun's Sparcstation 2, a 40-MHz midlevel workststion priced at about $15,000, in record numbers during the quarter just ended, according to Sun. The firm sold 49,000 total units in its fourth fiscal quarter, ended June 30, with its Scalable Processor Architecture (Sparc) machines acounting for the largest portion of units sold, said Kevin Melia, Sun's chief financial officer.

"Sun has continued to dominate the low- and midrange workstation market," said Jeff Canin, technology analyst at Montgomery Securities in San Francisco. Sun owns 30% to 35% of the entire workstation market, compared with market shares of 21% for Hewlett-Packard Co. and 16% for Digital Equipment Corp., Canin said.

He cautioned, however, that Sun's new Sparcstation IPX may eat into Sparcstation 2 sales in the near future because the IPX "has comparable performance, but it's cheaper, which will cut down on gross margins," he said.

Sun may also face price competition on the reduced instruction set computing front later this year, with IBM, HP and DEC expected to reduce prices on their comparable workstations, Canin said.

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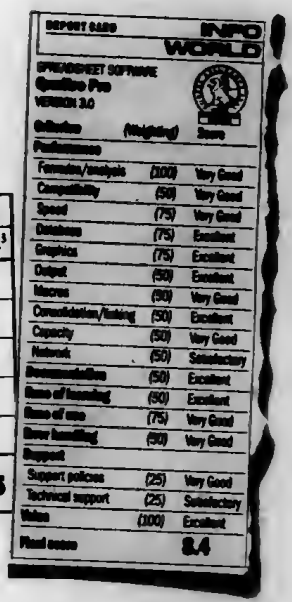
Number of ...	Quattro Pro 3.0[1]	Lotus 1-2-3 v. 2.3[2]	Lotus 1-2-3 v. 3.1[3]
"Excellent"	7	2	3
"Very Good"	8	4	5
"Good"	0	5	4
"Satisfactory"	2	5	3
"Poor"	0	1	1
Overall score	**8.4**	**6.3**	**6.5**

[1] Source: *InfoWorld*, April 29, 1991. [2] Source: *InfoWorld*, June 10, 1991. [3] Source: *InfoWorld*, January 28, 1991.



We don't blame Lotus for trying to underplay ratings such as these, but clearly Quattro Pro is more powerful. It has better graphics, better capacity, better macros, better consolidation and linking, and much more!

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ES/9000 boost doesn't impress competitors

BY JEAN S. BOZMAN
CW STAFF

Mainframe comparison shoppers should not expect a quick response from plug-compatible manufacturers to IBM's plans to improve performance up to 17% on Enterprise System/9000 models [CW, Aug. 5].

Amdahl Corp. and Hitachi Data Systems Corp. (HDS) are prepared to compete, company executives said, based on the processors they are due to ship this fall.

"I think we are in excellent shape," said Henry Cassel, director of processor systems marketing at Amdahl in Sunnyvale, Calif. "I believe our three-way and four-way 5995 M series models compete very aggressively with IBM's Summit machines. So we don't feel we have to do anything to respond."

Amdahl's 50 million instructions per second (MIPS) uniprocessor makes its four-way machine run at 184 MIPS, in comparison with the six-processor IBM ES/9000 Model 900, which is rated by Gartner Group, Inc. at 235 MIPS. However, Amdahl's six-way machine, due to ship next year, is rated at 248 MIPS, while its eight-way machine is now rated at 310 MIPS.

Jim Cassell, vice president of Gartner Group's Large Computer Strategies Service, said all three mainframe brands were reevaluated in late June because all three vendors ran revised software benchmarks based on IBM's MVS/ESA environment.

HDS officials expressed little concern over IBM's latest performance statistics, even though the HDS machines had been rated to be roughly equivalent to IBM's models before the performance boost announcement.

Gartner Group rated the four-way HDS EX 420 at 152 MIPS, the five-way EX 520 at 184 MIPS and the six-way EX 620 at 214 MIPS, noting that the last two machines will not be shipped until June 1992.

However, industry analysts said the three-way race between the mainframe makers had tightened somewhat and had the potential of continuing a months-old pricing war [CW, July 8].

"What the IBM announcement did was to narrow the price/performance gap between its systems and those of its competitors," said Susan Gannon, a mainframe industry analyst at Technology Investment Strategies Corp., a Framingham, Mass.-based market research firm. "We expect price competition to start to heat up in the first half of 1992, when Amdahl, IBM and HDS begin to ship these high-end machines in volume."

Avantek buyout expected to boost HP components

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. said last week it plans to acquire Avantek, Inc., a maker of communications equipment for the personal electronics market and the military. However, analysts said the $83 million merger should have little impact on current HP customers.

Components built by Santa Clara, Calif.-based Avantek will become part of HP's components group product line, which is sold through OEMs.

The components include high-speed computer-to-computer communications devices, such as transimpedance amplifiers for fiber-optic signals and those used for Fiber Distributed Data Interface, said Mark Chandler, industry marketing manager for HP's components group.

Avantek has been in financial trouble for some time. It laid off 10% of its employees in June and reported losses in 1989 and 1990.

History repeats itself?

The merger may not become an outstanding addition to HP's line if recent history with network companies is any indication.

In February 1989, HP bought 5% of 3Com Corp.'s outstanding stock and said it would resell 3Com's 3+Open software and offer support services to users of 3Com's LAN Manager.

"It never amounted to anything," said Richard Kimball, an analyst at Montgomery Securities in San Francisco.

"They might sell a few [3+ Open packages], and there is no major service relationship with them," said Alan Kessler, vice president and general manager at 3Com's Network Service Division.

In August 1988, HP bought 10% of Octel Communications, Inc., a Milpitas, Calif., voice mail company. According to Kimball, HP was to take over Octel's European distribution. However, "it never amounted to anything either," he said.

An Octel spokeswoman said the two companies realized sales would need to be more customized than initially expected. As a result, Octel took back control of European distribution in June.

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ADVANCED TECHNOLOGY

TECH TALK

Speedy chip in less space

■ IBM recently introduced what it said is the industry's first "thin film" multichip module for workstations and personal computers. The prototype module holds nine computer chips and 100 feet of connecting wire in a 2-in.-square package. Today's desktop computers use single-chip modules mounted on printed circuit boards rather than multichip packages, which are common in mainframes. Circuit boards, however, cannot carry signals between chips fast enough to keep up with the faster chips now being developed. The new multichip module shrinks the space between chips, reducing the time it takes electrical signals to travel between chips.

Unreal diet

■ At Siggraph 1991, held in Las Vegas last week, virtual reality crossed the line between technology and art. A "virtual dining" experience, a project by students from the San Francisco Art Institute's virtual environments class, treated diners to a low-calorie dinner of food and sex images navigated by the "eater." Renowned performance artist George Coats did nightly performances of his virtual reality work "Invisible Site."

Thinking about Turing

■ Artificial intelligence experts are readying to tackle the Turing test — perhaps computerdom's most challenging ever — on Nov. 8 at The Computer Museum in Boston. Alan Turing, the British genius, devised a test that attempts to determine whether a machine can think. The Turing test places a human "interrogator" in front of a computer terminal that is linked in another room to a person at a terminal or to a computer. The interrogator, by entering questions into his terminal, must figure out which of the two is on the other end. If he concludes that the responses are coming from a human, the computer can be considered a "thinking machine."

Multimedia suffers standards lack

Companies pushing different standards makes it hard to develop de facto standards

BY MICHAEL ALEXANDER
CW STAFF

Multimedia technology is an elegant melding of sight, sound and software on computer desktops. The multimedia industry, on the other hand, is a jumbled mess. The problem: A lack of standards that the industry sorely needs to move it into the mass market.

"Standards is a big topic these days," said Philip Dodds, compatibility project leader at the Interactive Multimedia Association in Annapolis, Md. His group, which comprises about 220 companies, was established to promote standards-setting efforts. "It is very painful to make the wrong decision because the [development] costs are high."

Four areas for standards

Multimedia experts at BIS Strategic Decision's Digital Multimedia Conference, held in Boston recently, said standards are needed in four key areas: application programming interface to multimedia hardware; file format for exchanging files across different platforms; compression algorithms for audio; and compression algorithms for still and full-motion video.

"The fact that each speaker giving a multimedia presentation here has to bring his own multimedia system is an indication of the bad state of standards," said Carl Machover, president of Machover Associates Corp. in White Plains, N.Y. "Until we have a way to interchange information, what we'll have is a hobby, not an industry."

There are many incompatible techniques for compressing both still and moving video images, and each of those involve trade-offs among resolution [picture sharpness], compressed data rate and decoding cost, according to one expert.

With currently available compression techniques, full-motion video of at least VHS quality at an acceptable price is not yet available on desktop computers, according to Rick Stauffer, marketing manager at Intel Corp.'s Multimedia Product Operation in Princeton, N.J.

Sheila Johnson

IMA's Dodds: *'It's painful to make the wrong decision...'*

"People have that expectation of VHS quality," Stauffer said. "Half a loaf is not enough to get us to multibillion-dollar-a-year stage."

The industry is leaning toward compression standards for still-image and full-motion video established by the International Standards Organization's Joint Photographic Experts Group (JPEG) and Motion Picture Experts Group (MPEG).

"MPEG and JPEG are more settled, but there is still more chaos in the industry," Machover said. IBM, Apple Computer, Inc., Microsoft Corp. and several other computer industry heavyweights are pushing standards in several directions. Since there is no dominant supplier, there is little chance that de facto standards will develop, Machover said.

The recent pact between IBM and Apple to collaborate on desktop systems and software has left multimedia developers scratching their heads, wondering what happens next. That agreement also includes a plan to cowork on a platform-independent multimedia environment.

IBM has been an active supporter and marketer of Intel's digital video interactive technology, a potential standard for video compression. Meanwhile, Apple is preparing to introduce Quicktime, an extension to System 7.0 software that would enable users to run applications that include animation, audio and video.

Quicktime has a proprietary audio and video compression scheme that exceeds that of JPEG and MPEG, according to Vicki Vance, multimedia specialist at Apple.

Microsoft has been working on its own standards for personal computers called Microsoft Windows Multimedia Extension (MME). The draft MME specification includes a Resource Interchange File Format for exchanging files across several different machines and a Media Control Interface, a standard software interface to multimedia hardware. The MME specifications reportedly will be released this week.

This fall, Philips Consumer Electronics Co., Sony Corp. and Matsushita Electric Industrial Co. will begin aggressively marketing yet another multimedia format called compact disc-interactive. The companies have been funding the efforts of disc developers as a way to prime the market with applications.

As long as the standards picture remains so muddied, developers are reluctant to start work on applications for fear of becoming caught in a new version of the Betamax vs. VHS videotape format battle.

Some industry analysts see that hesitancy as contributing to a chicken-and-egg problem: Without applications, there is little incentive for prospective business customers and consumers to buy the hardware; and without an installed based of hardware, there is little incentive to develop applications.

It is "extraordinarily difficult" for developers to decide which standards to provide product in, Machover said.

Too high a price

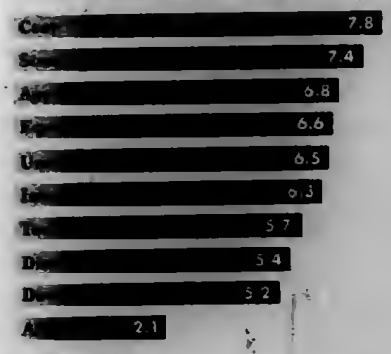
The primary reason that multimedia has not taken off yet is that the technology is too costly (see chart), according to BIS Strategic Decisions and other experts.

"To upgrade a personal computer to full multimedia capability costs several thousands of dollars," Stauffer said. "The result is no installed base of hardware and not enough applications. We're seeing the slow emergence of an industry with a lot of expectations but not a lot of business volume."

The "magic price point" where sales can be expected to take off in a big way is $1,000 for a playback machine and about $2,000 for a "creation station" that would allow users to create their own multimedia productions, Stauffer said.

The price is wrong

High cost and the lack of many elements are preventing multimedia from taking off



Elements shown were rated on a scale of 1 to 10, where 10 is most important

Total respondents: 125

Source: BIS Strategic Decisions

CW Chart: Michael Sumino

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EDITORIAL

The future is now

Imagine a day when you can run a corporation — a big company, say $600 million and growing fast — entirely on personal computers. Not a single bit of digital information is processed on anything other than a PC. That goes for data processed by accounting, human resources, R&D and the electronic mail network. And this is a very data-intensive company with a better than 1-to-1 ratio of PCs to employees.

This day is actually today, and the scenario is being played out not just at one company but at a growing number of big firms where a PC pedigree is synonymous with IS.

Granted, the pure PC-driven companies that we're talking about here are, in fact, computer vendors. Their IS architectures, admittedly kludgey, serve as test beds for what they view as the IS world of the near future. But kludgey systems or not, these are fast-growing and forward-looking companies vaulting toward the $1 billion mark without the benefit of a minicomputer or a mainframe.

It was 10 years ago that IBM unveiled its PC. The business press wrote about IBM's "invasion" of the home computer market. Here at *Computerworld*, a debate raged as to whether the announcement should even be covered at all. The big-iron bigots lost, and we did end up running the story on the front page with the headline "IBM's personal computer paves new corporate path."

What an understatement. Ten years ago, there were few visionaries who foresaw the revolutionary changes PC technology would bring to users, vendors and society at large. Customers will spend nearly twice as much on PC technology in 1991 than on mainframe technology. The computer industry is being completely remade before our eyes by PC advances that are making larger systems obsolete in a growing number of applications.

The most innovative software thinking in the industry is going on at the desktop. And cheap PC power is spreading the benefits of information technology in the same way telephony revolutionized communications two generations ago.

Today, the visionaries are more plentiful, and the future they anticipate seems almost fantasy-like: 100-MIPS PCs selling for $1,000 by the end of the decade; IS dominated by multimedia paradigms and keyboardless computing; and — is it possible? — the mainframeless corporation.

It's all possible, and increasingly likely, given the amazing advances of the last few years. It won't be an easy process to get there: Application downsizing is showing itself to be a multiheaded beast, and the real productivity benefits of desktop computing are still debatable. But the trend is inexorably in the direction of mainframe-like power in a desktop or portable package.

Imagine a world like this. Then think back to the first time you saw Charlie Chaplin in an IBM advertisement. It doesn't seem that long ago, and it wasn't. What is probably unnerving is that this "imaginary" world is no further off in the future than that little tramp is an image in the past.

LETTERS TO THE EDITOR

Open for business

The last article in your Open Systems series titled "Unix slow to scrap custom wrappers" [CW, July 8] led readers to believe that shrink-wrapped Unix software doesn't exist today.

However, shrink-wrapped software is available today from 88open Consortium Ltd. Currently, over 200 independent software vendors support 88open certification, and there are more than 180 Shrinkware applications that are available to buyers of 88open-certified systems. Representative software includes Oracle, Unify, Wordperfect, SAS and RM Cobol.

88open was started more than three years ago as a nonprofit organization with a mission to make open systems a reality by offering shrink-wrapped software applications packages that work on any system with an 88open certification seal.

Many of the new consortia today use 88open as the model they plan to emulate.

Tom Mace
President
88open Consortium Ltd.
San Jose, Calif.

Users, speak up!

With regards to "Developer certification bill sparks battle in New Jersey" [CW, July 15], there has, unfortunately, been a less than overwhelming acceptance of these certifications, though the Institute for Certification of Computer Professionals continues to work at gaining acceptance and with some continuing success.

The slow progress in this area is due more to the apathy of the user community than the voluntary nature of the program. If the users demand certification, it is available and will become more widespread as the users let it be known that they want it by backing it. Those of us who have been, through the process would welcome more user demand and support.

If New Jersey wants certification, it does not need to set up its own board and develop its own test. It can simply require existing certification as appropriate. In fact, any business, government body or institution that is concerned about certification can do the same. The tools are there to be used.

Julian M. Brook
Certified data processor
Birmingham, Ala.

Driving the wagon

Regarding "Get off the wagon train while you have a chance" [CW, July 15], comparing an IS professional to a wagon master is an insult.

Did the wagon master need to know OS/MVS, C, IDMS, IMS, DB2, VSAM, TSO, Roscoe, Unix, Cobol, CICS, Easytrieve and Excelerator to get the work done? The IS professional has to command a large knowledge base or, at least, maintain a memory reference point where information can quickly be found on many of today's complex software products.

Also, many IS professionals are struggling to keep up with the current deluge of new products that are flooding the IS market. How can it be suggested that the client community pick up this product support and the analysis/programming responsibility by 1995?

Additionally, some companies that let the client community develop systems on PC-based products are now working with IS to get these systems on a mainframe system because of security, backup and change-control concerns.

Suggesting that IS professionals find something else to do by 1995 and further suggesting that the client community will completely take over the IS responsibility in just 3½ years is not responsible.

Dick Miller
Ross Labs MIS
Columbus, Ohio

Harmful price cuts

Regarding "Kmart shops for Unix discount" [CW, July 15], someone should tell David M. Carlson that while he is doing "his job" of being ruthless about getting deep discounts for bulk purchases, he is also cutting his own throat for the future.

If companies like Unisys are forced into receivership because they are denied a fair margin on the machines that are still selling, then next time, competition will be gone. In a monopoly market, Kmart and people with the foresight of Carlson will get to pay an unfair margin to whomever is left in business.

Melvin A. Niska
Andover, Minn.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

End isolationism in research

Technological cooperation with East and West Europe is a must for U.S.

BY WILLIAM C. NORRIS

On a recent visit to the Soviet Union and Western Europe, I was struck by the enormous benefits to both East and West that could result from expanded technological cooperation.

This is a thought that has occurred to me on previous visits over the past 25 years, but the economic and political turmoil of the post-Cold War period have made such cooperation even more attractive and essential.

One major difference is that the U.S. is no longer the world's undisputed industrial leader. Sadly, there is growing evidence that Japan is overtaking us, with a newly integrated Europe not far behind.

Since it is clear that the only way to reverse this ominous trend is through a massive expansion of innovation to get new and improved products on the market, our first priority must be to obtain the technology to fuel the necessary innovation. The most important single action we could take to accomplish this would be to expand cooperation in research with other countries. This would give us better access to foreign technology, achieve reciprocity for U.S. technology and increase the efficiency of our own research efforts.

A second difference from past years is the historic and painful transition under way in the Soviet Union from socialism to a market economy.

The Soviets have a large research establishment that in many areas is comparable in scope and quality to our own. In the past, a high percentage of Soviet research and development was devoted to military applications, but the Soviets are now opening their defense R&D facilities to commercial research. Consequently, a large number of highly competent Soviet scientists are available and willing to work with their U.S. counterparts. And since pay scales for Soviet scientists are only about one-fourth those of U.S. scientists, substantial savings can be achieved in research costs.

The potential benefits from cooperation in research with Soviet scientists haven't gone unnoticed by other countries, especially Germany, which is aggressively seeking such relationships.

A third noteworthy change from the past is the growth in cooperative research among organizations in Western Europe, which the European Community is encouraging by underwriting a substantial amount of the cost of such programs. While the main objective of these programs is to strengthen European high-technology companies, the programs also serve to create an environment conducive to cooperation, one that will be receptive to the intiatives of U.S. organizations.

The merits of domestic cooperation among U.S. companies, universities and government laboratories are widely recognized, as evidenced by the rapidly growing number of research consortia. Since the passage of the National Cooperative Research Act in 1984, more than 170 research consortia have been formed. More are being planned.

To this point, most U.S. research consortia have shunned foreign participation. This is understandable in view of the formidable management problems confronting most U.S. companies in recent years, which first had to be addressed in order to achieve successful operation. However, with most of those problems solved and given the urgent need for the U.S. to obtain technology to fuel industrial innovation, it would now be advantageous for most U.S. consortia to invite foreign participation.

OUR FIRST PRIORITY must be to obtain the technology to fuel the necessary innovation.

Not only is the U.S. not benefiting as much as it should from foreign research, we are allowing other countries, especially Japan, virtually unlimited access to our university research and advanced small company technology. Meanwhile, the U.S. is not afforded equivalent opportunities in Japan because most of the research in Japan is under the control of private companies and because Japan lacks the kind of extensive small business sector that serves as a wellspring of innovation here.

Technology flow between Europe and the U.S. is not skewed so unfavorably against us because, although European countries also lack strong, innovative small business sectors, there is roughly equivalent access to university research.

There are straws in the wind moving in the direction of more international cooperation in research. For example, talks are being held between the European community and Washington, D.C., to expand cooperation in microelectronics, computers and other areas of electronics.

It is time for the nation to call upon its research consortia not only to help expand international technological cooperation but also to lead the way in demonstrating to the rest of the world how to perform research more efficiently and equitably through cooperation.

The U.S. is in a globalized economic contest. To win that contest and regain industrial leadership, we must think and act globally. Anything less will undermine our economic and social well-being and, ultimately, our national security.

Norris is founder and chairman emeritus of the board of directors of Control Data Corp. In 1983, he conceived and initiated the Microelectronics and Computer Technology Corp.

Accounting change may deny rookies a fair shot

BY JOHN LANDRY

In January, the American Institute of Certified Public Accountants (AICPA) issued a draft position statement proposing that software vendors recognize revenue from products or services upon their delivery instead of upon the signing of a contract. While the AICPA's goal is accounting consistency, its recommendations amount to nothing less than a fundamental change in traditional — and sound — industry practice.

In large part, the American Software Association (ASA) supports the proposed guidelines, but it does have concerns in the following areas where the AICPA is recommending pro rata or life-of-contract distribution of revenues.

- Term-use agreements (licenses for products that run for a period of months or years), which include incidental postsale services in a single yearly or monthly fee.
- The maintenance revenue element of an initial license sale.
- Revenue from ongoing license renewal and maintenance contracts.

While revenue recognition practices might at first seem a narrow accounting issue, they actually have an enormous impact on a software company's ability to attract financial support and devote the necessary resources to successful product development and support. The changes to traditional practices proposed by the AICPA have the potential to misrepresent the financial position of software companies — particularly small, fast-growing ones — and make it difficult for them to obtain the financing they need for continued growth.

The software industry largely reflects an entrepreneurial model. While the industry has, over the last 20 years, created some immense companies, innovation and excitement have typically been the province of smaller organizations that can move quickly to fulfill a founder's technical visions and market needs. Historically, venture capital has played a vital role in helping these smaller companies bring their products to market. In today's economy, however, venture dollars are harder to come by and may be scarcer still for some of the most promising young companies under the new accounting regulations.

Small, fast-growing companies — with annual revenue increases of 50% to 70%, for example — typically invest heavily in support services because customer satisfaction is essential to their growth. Yet under the proposed new accounting guidelines, software companies that incur significant front-end expenses for such items as customer support will hurt their performance on paper. Because companies must defer the majority of the support/service revenue, it is likely that the cost of supporting new customers will exceed the associated revenue. This could have a negative impact on a company's bottom line, even if it is growing rapidly.

Scott Matthews

In contrast, larger companies, with a far slower growth rate and a heftier recurring maintenance revenue, will find their balance sheets less affected by the new regulations because their well-established products require less support service.

The irony of the situation is that firms actively gaining new customers appear to have the greatest discrepancy between expenses and revenues under the proposed revisions, while more stagnant firms are able to maintain a better balance sheet.

The ramifications of the inconsistency, unfortunately, go far beyond paper. The ASA believes few investors will appreciate the issues behind the numbers and will simply ignore what should be the industry's most promising young companies or will seek a degree of ownership unacceptable to most entrepreneurs. Either scenario hurts the software industry.

Users will also suffer. Companies facing investor pressure to match expenses and recorded revenues will have to make cuts to accomplish the goal. Since sales and marketing operations are essential to attracting new customers, they will more than likely survive intact. Development and support efforts, however, which offer less immediate benefits, will likely be curtailed, to the detriment of customers.

The ASA believes that the issue of revenue recognition merits further study and has formed a task force for that purpose. While the AICPA is striving for accounting consistency with its proposed changes, the new guidelines would make software companies the only ones required to defer revenues from what are essentially product warranties. The AICPA hopes to implement the planned revisions for the fiscal year following Dec. 15, 1991; the ASA hopes the AICPA will delay implementation until further examination.

Landry is executive vice president and chief technology officer of Dun & Bradstreet Software. He is also president of the American Software Association, a division of Adapso, the computer software and services trade association.

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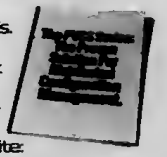

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SOFTWARE SHORTS

SAP finds firm ally

Software manufacturer SAP America, Inc., a subsidiary of SAP AG, recently entered into a marketing alliance agreement with consulting firm Coopers & Lybrand. Under the agreement, Coopers & Lybrand will provide consulting services and joint marketing opportunities for the SAP R/2 manufacturing software system.

Coopers has established a SAP Support Group for customer training, implementation and project management on the R/2 system. The R/2 system consists of 10 integrated modules for real-time, on-line mainframe environments.

Access Technology's 20/20 spreadsheet is now available for IBM RISC System/6000 workstations at $600 per user, the software vendor announced recently. Based on the X Window System and the Open Software Foundation's Motif graphical user interface, the spreadsheet now runs on 25 different hardware platforms. Access Technology also introduced three 20/20 add-in connectivity tools for the RS/6000, including a database connection that allows users to work with data from Oracle Corp., Sybase, Inc. and Informix Corp. databases without having to know SQL.

Is AS/400 open? Anyone care?

BY MARYFRAN JOHNSON
CW STAFF

Like most midrange customers, Rich Kolbe is hardly losing sleep over IBM's newfound fondness for talking up the "openness" of the Application System/400.

"Many people who have AS/400s installed do not consider openness a driving issue," said Kolbe, the information systems director at Harley Davidson, Inc. in Milwaukee. "What IBM is doing now will help them move toward different markets, however."

Still in the process of downsizing Harley Davidson's applications from a 3081 mainframe to a network of AS/400s, Kolbe echoed the comments of other users who seem focused on expanding performance and upgradability as their businesses grow.

"I don't really have much need to port my applications around," said Jerry Burton, technical support manager at Costco Wholesale Corp. in Kirkland, Wash., which has two mainframe-class AS/400 D80 models. "When it comes to openness, our needs really are involved in networking that gives us better options."

Yet openness is the politically correct marketing stance these days, no matter how proprietary the system. That point is not lost on Robert LaBant, IBM vice president and general manager for Application Business Systems, the division that raked in $14 billion in AS/400 sales last year.

"We are trying to be responsive to what customers want, and that's portability of application programs and networking with multiple vendors," LaBant said recently. "If proprietary means that we write the operating system, then yes, the AS/400 is proprietary. If it means closed, then I totally disagree."

Yet IBM executives are careful to say they are "extending

Continued on page 26

An 'open' book

IBM is pushing the "openness" of its proprietary midrange AS/400s through the following:

- Open Access/400, which offers new access to low-level system functions and application programming interfaces previously closed in the OS/400 operating system.
- Hardware interfaces through the IBM 5159 Programmable I/O Controller, which permits devices such as time clocks, badge readers and scanners to attach directly to the AS/400.
- Improved Advanced Peer-to-Peer Networking capabilities and products coming next year that will support the Open Systems Interconnect and Integrated Services Digital Network.
- Ability to communicate across other platforms using common communications standards, most recently Transmission Control Protocol/Internet Protocol.

MARYFRAN JOHNSON

Airline takes CASE path to frequent-flier system

ON SITE

BY ROSEMARY HAMILTON
CW STAFF

CALGARY, Alberta — With the help of a software template and a set of computer-aided software engineering (CASE) tools, Canadian Airlines International was able to create a new frequent-flier system in less than a year that now handles more than one million members.

The airline has been using its CASE-based Canadian Plus frequent-flier system since August 1990 and in that time has experienced no major technical problems, said Kevin Carroll, data resource manager. For the past year, the system has required "less than a half person-year" for maintenance.

Carroll said the airline set out to revamp its batch-oriented frequent-flier operation in the late 1980s and was certain that this job called for a whole new software system as opposed to reconstruction.

The original system was designed to handle about 100,000 members but was soon overloaded by the mushrooming base of frequent fliers. By the late 1980s, the wait time to enroll a new member or change a current member's profile could take up to six weeks, Carroll said. With the new system, enrollments and changes can be made in an average time of two minutes, be added.

The decision to change the frequent-flier system dovetailed with an overall corporate information systems upgrade program under way at the airline.

One piece of the corporate initiative called for "consistent application development technologies," which meant an evaluation of CASE tools.

This search led to both Texas Instruments, Inc.'a Information Engineering Facility (IEF) and the software template, itself developed with IEF and offered by Trans World Airlines.

The template was essentially the model for TWA's frequent-flier system. Canadian Airlines decided to license it and then use the IEF tools to tailor it to its own operation.

"It's an open-ended model that can be changed," Carroll said of the TWA template. "We took the model, tailored it to meet our business rules and then pressed the old button and out came the generated code."

Carroll said other CASE projects are under way at the airline now, in part because of the success with the frequent-flier system. He said a critical factor in its success was the "mind-set" of the team.

"There's a mind-set that has to change in not only the front-line team but also in the support staff and technical people" affiliated with the project, he said. "Departmental strategies or work practices really have to be put to one side. Cherished notions really have to go into the melting pot, and you've got to focus on getting the application done."

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Bank feels secure with IBM/Wang union

National Westminster optimistic that companies can resolve issues, benefit from tech knowledge

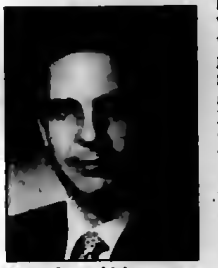
ON SITE

BY SALLY CUSACK
CW STAFF

NEW YORK — It would seem that IBM and Wang Laboratories, Inc. equipment can coexist in a mutually beneficial capacity, given the right set of circumstances.

Jeff Speight, senior vice president for the communications division of National Westminster Bancorp, has been working with both computer vendors for almost 10 years.

With 40 Wang VS minicomputers connected to several IBM 3090-class mainframes throughout the organization, the information systems chief said he is not unduly concerned about the recent IBM/Wang alliance.



Speight *said he sees no reason for panic over the IBM/Wang alliance*

"The worst thing that could happen is that the Wang logo may change," Speight said from the New York-based bank's corporate data center on Long Island.

However, he said there are some issues that still need to be resolved: Technology upgrades and service and support questions naturally arise when vendor alliances are announced.

Speight said he hopes that IBM will take advantage of Wang's "superior office-automation" technology and imaging products. The bank uses the IBM mainframes for processing back-office and on-line applications.

National Westminster has the 40 VS systems located in several major centers throughout the organization. Originally installed to support word processing and electronic mail applications, the midrange systems now function as office-automation servers to the IBM mainframes.

"Our entree for putting one terminal on the desk for all functions came five or six years ago when Wang announced 3270-emulation capabilities," Speight said, adding that the 3270-emulation software gave the bank the leverage it needed to maximize investments.

Linking the systems

VS systems are linked to the mainframe in several ways. Back-office personnel and programmers use reverse log-on software products, a piece of mainframe-resident software that allows the VS to talk to the host. The other links are 3270 pass-through-type communications. All the minicomputers sit on an X.25 network, which links branches throughout North America to London and Hong Kong.

The parent company, National Westminster PLC in London, also uses VS technology connected to the network. Speight estimated that there are 10,000 currently on the worldwide directory — a heavy investment in Wang technology.

"We have five office-automation analysts on the payroll, and most are former Wang employees," Speight said, adding that the company is fairly self-sufficient from a service and support standpoint.

He noted that Westminster "wouldn't panic if Wang went out of business tomorrow, as long as we could get the repair parts."

The bank also has a little room to grow with the VS. Currently running on an older version of the operating systems, they are looking to install the most recent VS OS 730 upgrade. This will allow the financial firm to double current connectivity capacity.

Speight said the bank could "live with what it has" if VS products were not upgraded or enhanced, but he was careful to mention that there is not a product available as good as Wang Office — the vendor's office-automation software system.

"People are realizing productivity gains from electronic mail. We looked at IBM's Officevision when it came out a couple of years ago, and as far as I know, it still lacks a centralized directory for an enterprisewide kind of system," Speight said.

National Westminster Bancorp

Because IBM is a primary vendor, Speight has noticed, Wang has developed several software products over the years to make the VS very "IBM integratable."

An example of this is Process Package, a loan-processing software that resides on the VS and can travel across various vendor platforms to extrapolate data from different boxes.

According to Speight, the bank is not necessarily looking to go with the IBM Application System/400 midrange computer. He said ease of use is the primary benefit his users get from the Wang systems.

Referring to the recent vendor alliance, he said he hopes "it won't turn into a bargain sale for IBM."

CGI tries fresh look at interface builder

BY KIM S. NASH
CW STAFF

Users tired of manipulating difficult mainframe commands from 3270-type terminals are the target for a new graphical user interface (GUI) builder from CGI Systems, Inc. The Pearl River, N.Y.-based computer-aided software engineering (CASE) company last week introduced Pacbase Automatic Windowing Facility, which CGI called the first step in its client/server strategy.

Meanwhile, analysts advised potential buyers to be cautious, saying software development tools that automate the building of true client/server applications are at least a year away.

CGI's Facility will reportedly let users add graphical interfaces to their existing mainframe programs by creating GUIs for either IBM's OS/2 Presentation Manager or Microsoft Corp.'s Windows.

"In a technical sense, it's not client/server computing, but it makes mainframe applications easier to use on smaller platforms, which is a start," CGI President Richard Ramsdell said.

According to Ramsdell, Facility is different from existing GUI-making products, such as Easel Corp.'s Easel, because CGI's offering generates a GUI using either a local- or host-based repository. Easel users, however, can generate GUI code from a personal computer or workstation, but they must later reconcile that new code with information contained in a host-based repository, Ramsdell said.

> IN A RECENT survey, one-fourth of the 1,800 corporate IS executives surveyed said client/server is nothing more than a "confusing buzzword."

CGI claimed it is the only CASE vendor that currently sells a repository that can be set up on a local-area network or stand-alone PC as well as on a larger host.

CGI's method "is something new, but true client/server CASE is just a buzzword for now," said John Palmer, a principal at consulting firm Atlantic Systems Guild, Inc. based in New York.

Indeed, many users, developers and consultants still struggle with the meaning of client/server computing and how to best develop applications for it.

One-fourth of the 1,800 corporate IS executives surveyed recently by International Data Corp., a market research firm in Framingham, Mass., said client/server is nothing more than a "confusing buzzword."

Others are less skeptical. CASE consultant Vaughan Meryl called CGI's announcement significant because, he said, it shows support for users making plans for future application development tactics involving CASE.

At least one user seemed impressed with Pacbase Automatic Windowing Facility and the role it could play in his company's client/server CASE plan.

Bill Sudweeks, manager of database administration at Questar Service Corp., said revamping mainframe applications for client/server computing is his company's "main thrust of business right now."

The Salt Lake City-based oil and gas company has planned to redistribute its mainframe-based customer service applications so that much of the work can be done from networked PCs, according to Sudweeks.

Open AS/400

CONTINUED FROM PAGE 23

the openness" of the AS/400. No sensible customer takes that to mean it will actually become an open system akin to a Unix-based machine.

In a research study IBM commissioned to study market segments for a more open AS/400, the conclusions had a compelling bottom line. The study claimed that extending interoperability with Unix, DOS and other operating systems would enable IBM to position the AS/400 to compete in a $100 billion segment of the global market by 1995. The biggest software chunk of that market — an area in which the AS/400 is already strong — was manufacturing and distribution, with an estimated $24 billion size by mid-decade.

LaBant said that IBM is already extending the system's hospitality by opening certain application programming interfaces to third parties, adding industry-standard Transmission Control Protocol/Internet Protocol networking and improving C language capabilities on the machine.

Yet just because a user can write an application in the C language on the AS/400, this does not mean it will skip merrily over to another platform without a tedious rewrite, analysts said.

"The AS/400 is probably the most proprietary system on the planet," said Peter Burris, an analyst at International Data Corp. in Framingham, Mass. "But IBM is definitely taking steps, such as Open Access/400, to make the machine instruction interface available to third parties and give people access to underlying resources like queues and buffers."

IBM is also making a high-profile effort to bring software vendors on as partners, Burris noted. New, albeit limited, connectivity between Novell, Inc.'s Netware and the AS/400 via an IBM Token Ring is another welcome sign, both analysts and users agreed.

Posix position

Also under investigation, LaBant said, is bringing Posix compliance to the OS/400 operating system. Posix, or Portable Operating System Interface, is a limited set of industry standards aimed at making applications portable across open systems environments.

"They have to do Posix because the U.S. government won't buy without it, but nobody in his right mind would use it on the AS/400," said Teresa Elms, president of San Diego-based Elms Technical Communications, a market research firm specializing in IBM midrange machines.

Elms said she views IBM's openness strategy on the AS/400 as a carefully monitored peek inside the machine for select vendors and users only. "If a customer clubs IBM over the head hard enough, they will open up pieces of the operating system," she said. "But IBM will never fully and publicly document the operating system interfaces. They will never lose that control."

Then again, the average IBM midrange customer bought the machine because the last thing he wanted was Unix-style openness in the first place, Elms added. "These midrange customers do not want to think about technology. They want to think about their businesses," she said. "If they're techno-geeks, they don't buy the AS/400; they buy Unix."

HARDWARE SHORTS

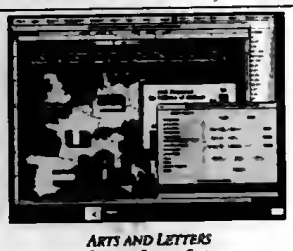
Sequent, Price Waterhouse begin joint project

Sequent Computer Systems, Inc. recently announced an alliance with **Price Waterhouse** to provide joint consulting and testing in large-scale systems integration projects. Under an agreement that makes Sequent part of Price Waterhouse's Open and Relational Systems (ORS) consulting group, Sequent's Symmetry 2000 midrange line will be installed at all four ORS centers, in Bethesda, Md., San Francisco, Denver and Chicago.

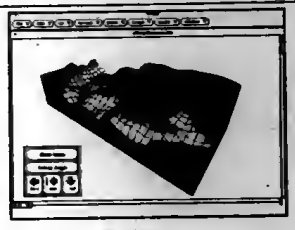
Primeservice, the service unit of **Prime Computer, Inc.**, signed a five-year contract with **Tatung Science and Technology, Inc.** in San Jose, Calif., to provide support for Tatung's Scalable Processor Architecture-based machines. Natick, Mass.-based Prime said it will service Tatung products 24 hours a day, seven days a week at 330 locales worldwide.

XL/Datacomp, Inc. has announced availability of refurbished IBM Application System/400 Model B computers, claiming that they offer the performance specifications of the new Application System/400 Model D but cost 30% less. Included in the price is a one-year hardware warranty and one year of free telephone support. XL/Datacomp lost its IBM reseller status late last year and no longer markets new IBM systems.

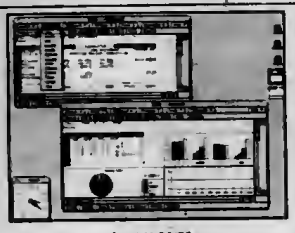
Uniplex Business Software from **Uniplex Integration Systems, Inc.** will be marketed as the preferred office productivity software for Symmetry 2000 computers from **Sequent Computer Systems.** The contract, worth $5 million to Uniplex in the first three years, calls for both companies to sell the integrated office environment.



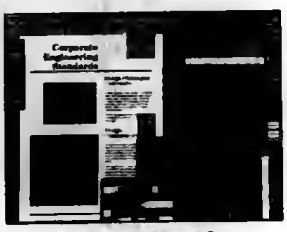
ARTS AND LETTERS
Computer Support Corp.



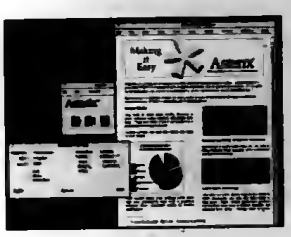
WINGZ
INFORMIX Software Inc.



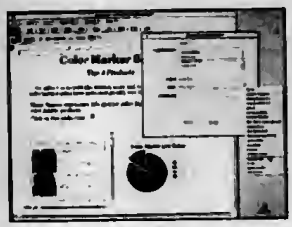
ACCESS 20/20
Access Technology Inc.



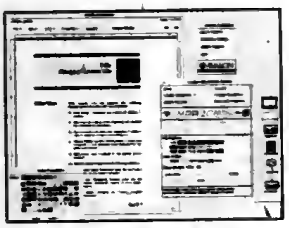
ISLAND WRITE, DRAW & PAINT
Island Graphics Corp.



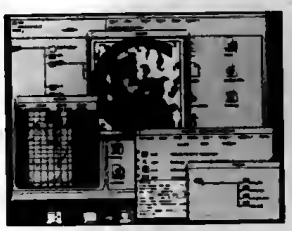
ASTERIX
Applix Inc.



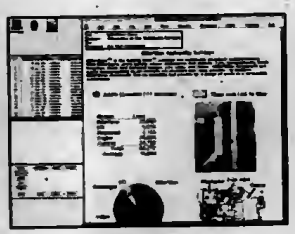
RAPPORT
Clarity Software Inc.



AVALON PUBLISHER
Elan Computer Group Inc



CONVENIENCE PLUS
Softsource Corp.



BBN/SLATE
BBN Software Products Corp.

Formula for EIS success

BY KIM S. NASH
CW STAFF

ST. LOUIS — Midlevel information systems managers must be involved from start to finish in installing an executive information system (EIS) or the project may fail, according to a recent report from Washington University.

Conventional industry wisdom dictates that a successful EIS is one supported by the people who will use it — senior executives on the business side of the house.

However, "Executive Information Systems: A CSDP New Technology Report" also found that if IS middle managers are left out of the EIS-building process, the project may fall apart.

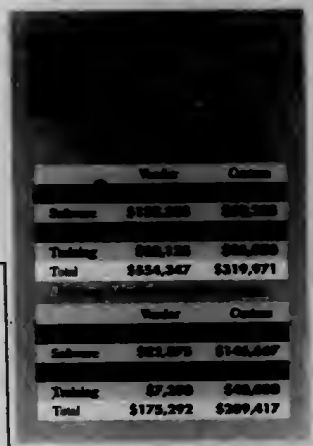
IS managers must understand that while an EIS may fetch some data they were once responsible for, it will probably not usurp their jobs, said Curt Hartog, associate director of the Center for the Study of Data Processing (CSDP).

"They will feel their positions are threatened and will resist the system," Hartog said. He studied EIS installations at approximately 30 companies over a period of four years.

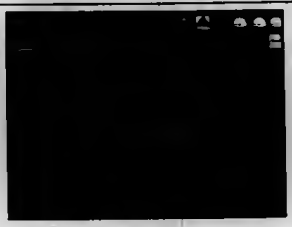
Hartog cautioned against installing an EIS if the company is reorganizing business or management structure. "It doesn't make sense to build a management tool like an EIS when your very business is changing," he said.

The study warned EIS builders of other potential problems:

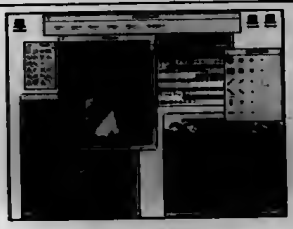
- Focusing only on immediate needs. Plan the EIS with expansion in mind. One firm created an EIS based on terminal emulation, with data downloaded to personal computers. It worked fine until divisional managers wanted access, slowing the download process to a crawl. The company had to completely redesign the system.
- Ignoring bureaucratic reality. Understand political issues involved, which can include everything from the business executive who cannot use a PC to the departmental manager who panics about letting the big bosses access "his" data.
- Overselling EIS. Resist the urge to push new technologies if they do not meet the needs of EIS users. Instead, make discreet executive education part of the plan.



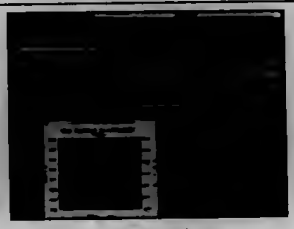
Source: University of Georgia



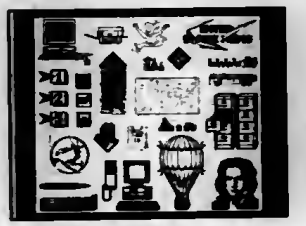
dBASE IV
Ashton-Tate



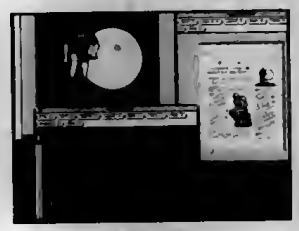
DIGITALPHOTO
Pacinnus Corp.



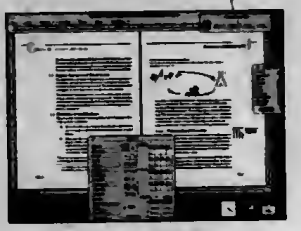
LOTUS 1-2-3
Lotus Development Corp.



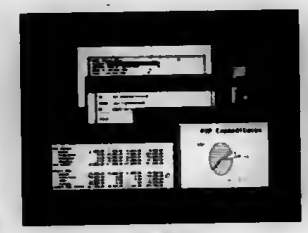
CLICKART
T/Maker Company



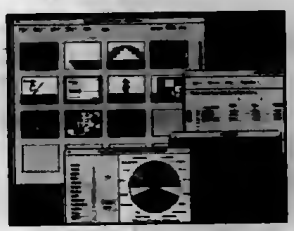
WORDPERFECT
WordPerfect Corp.



FRAMEMAKER
Frame Technology Corp.



QUINTET
DUX Software Corp.



AUTOGRAPH
FICOR Inc.

ARTISAN
Media Logic Inc.

High tech boosts Special Olympics

BY ELLIS BOOKER
CW STAFF

MINNEAPOLIS — Judging by the proud athletes, their cheering families and the delighted information systems personnel, last month's 1991 International Special Olympics Games was a total success.

"Everything went smooth as silk," said computer systems manager Art Stelzer.

The Eighth Special Olympics attracted 6,000 mentally retarded athletes from 90 nations, making it the largest sporting event of 1991. It was also the most computerized one ever, Stelzer said.

IBM donated an Application System/400 Model B70 and some 250 Personal System/2 workstations. The personal computers were linked over a Token Ring local-area network back to the AS/400.

Software applications and support were provided by Andersen Consulting and Minneapolis-based Analyst International Corp. Andersen designed and implemented a Volunteer Management System for the AS/400 to match some 30,000 volunteers at the games with 37,000 work assignments at about 40 locations. A total of 1 million hours of volunteers' time was managed by the system. At the 1987 games, volunteers received form letters with handwritten assignments.

In another advance over the 1987 games, the logistics system featured walk-up terminals at which spectators could learn how the athletes had performed and where events would be held.

SOME MERGERS W

Confused about the future of your dBASE® applications? The answer is Clipper 5.0.

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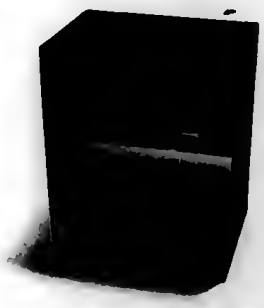


The Application Development Standard

NEW PRODUCTS — SOFTWARE

Development tools

Saber Software, Inc. has announced enhancements to its Saber-C programming environment for Unix workstation platforms.

Version 3.1 of Saber-C includes the ability to work with C language source code that provides preprocessed embedded statements of other types, such as SQL statements for Oracle Corp. and Informix Corp. databases. Fortran objects can also be imported into the Saber-C environment.

Saber-C is available on workstations from Sun Microsystems, Inc., Digital Equipment Corp. and Hewlett-Packard Co. The price is $2,995.

Saber Software
10 Fawcett St.
Cambridge, Mass. 02138
(617) 498-3000

American Interface Computer, Inc. has ported its IF/Prolog Version 4.0.6 development environment to two new platforms.

The software, used for developing expert systems and rule-based applications, is now available on Texas Instruments, Inc.'s TI-1500 minicomputer, running under Unix V.3. The cost is approximately $7,000.

On Hewlett-Packard Co.'s HP 9000 Series 700 workstation platform running under the HP-UX operating system, IF/Prolog 4.0.6 ranges in price from $7,200 to $12,500.

American Interface Computer
Suite 200
1 Westlake Plaza
1705 Capital of Texas Highway South
Austin, Texas 78746
(512) 327-5344

Applications packages

Coda, Inc. has released the Integrated Accounting System (IAS) Version 6.0 for the Digital Equipment Corp. VAX.

IAS integrates standard accounting modules such as General Ledger and Accounts Payables and Receivables into a single relational database. According to the company, the integrated structure allows a single Report Writer to cover all dimensions of the systems and eliminates the need for batch updates or manual reconciliation in balancing. The new version adds a Fixed Assets module and a Report Scheduler.

Pricing ranges from $35,000 to $350,000, depending on central processor.

Coda
Numerica Building
1155 Elm St.
Manchester, N.H. 03101
(603) 647-9600

HARDWARE

Data storage

AT&T Bell Laboratories has created ABARS, the automatic backup and recovery system for Unix.

ABARS coordinates incremental optical-disc backup activity. The system's jukebox format allows users to increase backup capacity easily. ABARS reportedly restores files faster than magnetic tape drives.

Pricing ranges from $100,000 to $400,000, depending on network configuration.

AT&T Bell Laboratories
185 Monmouth Pkwy.
West Long Branch, N.J. 07764
(908) 870-7234

IPL Systems, Inc. has extended its 6700 series of tape subsystems for the IBM Application System/400.

Four new 8mm subsystems are available, ranging from the 2.5G-byte IPL 6750 to the rack-mounted IPL 6765 with 20G bytes of storage and data transfer rates up to 500K byte/sec. All IPL 6700 systems feature an LCD display of diagnostic information.

Pricing for the subsystems ranges from $6,000 to $20,000, depending on storage capacity and configuration.

IPL Systems
60 Hickory Drive
Waltham, Mass. 02154
(617) 890-6620

COMMENTARY

Patricia Keefe

Waving the OS/2 banner

A double dose of OS/2. IBM has planned a double-barreled shot of OS/2 evangelizing on Thursday, starting with a heavy-duty presentation at the Windows & OS/2 conference this week in Boston. The big blowout comes later that evening at an event co-sponsored by the Boston Computer Society.

IBM will hold a strategy briefing and demo at 7 p.m. in the Copley Marriott Hotel, complete with OS/2 videotapes and a special software drawing. (Hmmm, sounds like something Microsoft would do . . .) IBM executives Lee Reiswig and Joseph Guglielmi will preside.

Hot on the beta trail: A user who has a beta copy of Lotus Freelance for Windows reports, "It's a great product, so easy to use!" He likes the fact that he can start up the program and "draw good-looking charts that work." The user maintains he can't do this with IBM's Hollywood, nor with a beta version of Software Publishing's Harvard Graphics for Windows, which he claims is "too unstable." As for Charisma and Designer from Micrografx, he says they are "too hard."

Continued on page 37

Microsoft quantifies Windows success

BY PATRICIA KEEFE
CW STAFF

Summer stock for Microsoft Corp. means hitting the road to play up substantial, and in some cases, costly statistics about the acceptance of MS-DOS 5.0 and Windows 3.0.

In addition, Steve Ballmer, Microsoft's senior vice president of systems software, revealed the results of an independent survey on Windows 3.0 users.

It is no secret that Windows is a success, or that MS-DOS 5.0 has taken off like a shot. It is also clear that Microsoft is spending big bucks to underwrite that success. The road show's aim is to put that success into sharper focus.

Ballmer said the company has shipped 1 million MS-DOS 5.0 upgrades in the first 30 days of availability. The installed base tops 70 million, and Microsoft claimed that DOS has an annual run rate of more than 18 million.

Of course, Microsoft's main concern is Windows 3.0, which has so far sold more than 4 million copies and more than 50,000 software developers kits. The company is spending $31 million on advertising and marketing and another $34 million for product support.

In a June 1991 Microsoft survey of what it sees as the top 70 developers, 100% said they will both test and take advantage of Windows 3.1 and write to the Windows 32-bit application programming interfaces. Only 20% said they will do work on OS/2 2.0, Microsoft said.

Support has turned out to be a persistent smudge on the Windows lens. Chairman Bill Gates acknowledged as much in a recent trade show keynote address and in an internal memo to his executives.

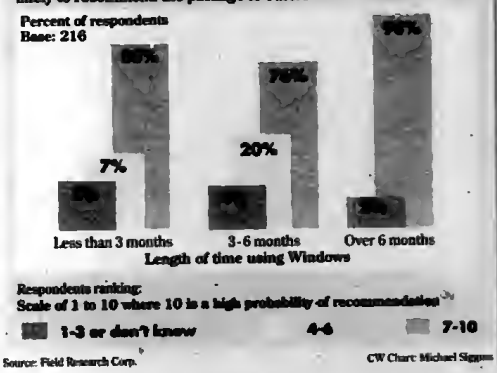
"It is really embarrassing to have people have to wait so long on the phone to talk to us about problems in our products . . . We will spend what it takes to have the best support [without an 800 number]. I think we can cut the number of phone calls generated by our products to less than half of what it is today and use training and technology to cut the length of the phone calls," Gates said in the memo.

Microsoft announced plans last week to beef up the support

Continued on page 36

Word of mouth

Users having the most experience with Windows are also most likely to recommend the package to others



Source: Field Research Corp.

CW Chart: Michael Siggins

IBM graphics card to die but will live on in clones

BY MICHAEL FITZGERALD
CW STAFF

One could call IBM's decision to kill its 8514/A high-resolution graphics card as of Oct. 2 the death of an era that did not exist.

When it was announced in 1987, the 8514/A, with its 1,024- by 768-pixel resolution, was hailed as the successor to IBM's graphics hardware standard, Video Graphics Array (VGA), which had 640- by 480-pixel resolution. But 8514/A was not backward-compatible with VGA and so would not run software written to work with VGA cards.

As a result, Jon Peddie Associates, an Oakland, Calif.-based graphics research firm, said only 116,000 boards have been shipped in its life, compared to 5 million VGA boards in 1990 alone.

So in 1990, when IBM introduced its Extended Graphics Array, which matched the 8514/A for resolution and offered an extendable architecture and backward compatibility with VGA, the 8514/A became a sort of orphaned product. However, third-party board makers such as Western Digital Corp., which had finished their own clones of the board, were adamant that the 8514/A would build momentum in the high-resolution market for at least two years.

The third-party vendors could still be right, but it will be in spite of IBM's absence.

One analyst called IBM's move "dumb."

"I think they just made another market for other people," said Jon Peddie, president of Jon Peddie Associates.

"From an internal strategic planning point of view for IBM, it would be logical to [cut the 8514/A] — but, if the only way [IBM] can get a customer to move from Product A to Product B is to make Product A not available, you have to wonder about its ability to market Product B," Peddie said.

Sometimes sharing will slow you down.

Now there's a new LaserJet fast enough and smart enough to keep the whole group happy. The LaserJet IIISi printer. A 17ppm powerhouse designed for high volume. And multiple users.

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HP sets a new standard for I/O performance with optional Ethernet or Token Ring Interface cards that support Novell or

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If you're ready to hook your users up without slowing them down, call **1-800-752-0900, Ext. 2134** for more information on the LaserJet IIISi and the name of your nearest authorized HP dealer.

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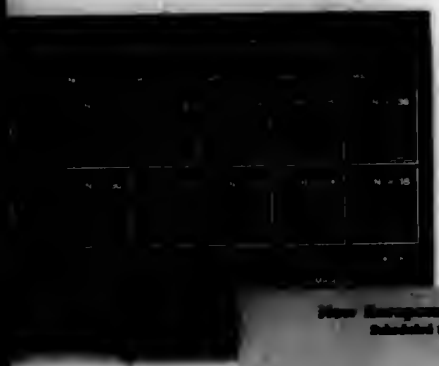

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Phone 919-677-8200 ☐ Fax 919-677-8123

*From IBM®, DEC®, Sun, HP®, and others

Add-in board lets IBM PCs run Macintosh software

BY JAMES DALY
CW STAFF

SAN JOSE, Calif. — The recent Apple Computer, Inc. and IBM cross-licensing pact may take years to bear technological fruit, but one firm has already begun pulling the disparate platforms together: Hydra Systems, Inc. has announced a personal computer add-in board that allows IBM PCs and compatibles to run Apple Macintosh software.

The Andor One is a combination hardware and software package that allows PC users to insert a Macintosh disk into their 3½-in. disk drive and begin running thousands of Macintosh packages instantly, according to Hydra Systems spokesman Wendell Brown.

The hardware consists of a full-length PC card containing a Motorola, Inc. 68HC000 16-MHz chip as well as an on-board video controller and floppy controller. Users must separately purchase and install Apple 128K read-only memory chips as well as Apple's System and Finder software, all of which are available at many computer stores.

The board, which runs at twice the speed of a Macintosh Classic, uses IBM standard peripherals such as mice, keyboards, hard disks and 3½-in. floppy drives. The Andor One works with all PCs ranging from IBM PC XTs through 486s with at least 512K of memory, an Enhanced Graphics Adapter or Video Graphics Array display card and monitor and an available full-time slot.

Andor One also offers an Appletalk-compatible RS-422 connector, allowing it to be directly networked with Apple Laserwriters, Localtalk, Phonenet and other networking devices.

The ability to run Macintosh software on IBM PCs allows the user to explore both platforms simultaneously, without an expensive financial commitment, Hydra officials said. Users need only press both shift keys to toggle between the PC and Macintosh screens.

The board allows IBM PC users to experiment with Macintosh software before committing to its purchase, and end users can continue to run their PC applications while becoming familiar with the Macintosh platform.

Software developers could also score points with Andor One because it allows them to sell their wares into the PC market while preserving the benefits of the Macintosh user interface, Brown added.

The Andor One has a suggested price of $995.

Laptops make sales force shine

ON SITE

BY MICHAEL FITZGERALD
CW STAFF

NASHVILLE — The Bridgestone Tire side of Bridgestone/Firestone, Inc. thinks it has a way to make diamonds in the rough shine.

In March 1991, Bridgestone Tire executives told the information systems department to pilot a laptop project in development for two years among its lowest performing sales representatives. The project was labeled a "go" when those salespeople became top performers after getting the laptops.

John Moore, manager of sales/marketing systems at Bridgestone Tire, said the company piloted a project called Bridgestone Information System Network (Bisnet) with 14 of its 180 sales representatives.

"We saw a fairly substantial increase in sales" among that group, Moore said. The sales representatives, who service some 3,500 tire dealers in the U.S., took their laptops — Toshiba America Information Systems, Inc. T1200XEs — and developed personal programs that took advantage of demographic data to improve customer service.

Moore said the dealers that Bridgestone Tire interviewed for feedback "were very enthusiastic" about the computer information as well.

Tom Kopp

Bridgestone Tire's Mayes, left, and Moore: *Salespeople, tire dealers and customers benefit from the use of Toshiba laptops*

Ralph Mayes, executive director of IS at Bridgestone Tire, said the company had considered giving more power to its field sales personnel for several years. The company decided two years ago to focus on the customer.

"We had a problem not unlike most companies: By the time we got information to remote sites, it was several days or several weeks old and not very timely for supporting direct sales or the direct sales call," Mayes said.

The Bisnet project arose when the company moved its headquarters from Akron, Ohio, to Nashville, Mayes said. Bridgestone Tire looked at the critical IS issues with senior management, and empowering the sales force proved to be one of the issues that was most important to James P. McCann, Bridgestone Tire's president and chief operating officer, added Mayes, who reports directly to McCann.

Bridgestone Tire's goal was to make its customer service and direct sales support the best in the industry, Mayes said.

Data at their fingertips

Sales representatives have the ability to call up data from a DB2 database residing on an Akron-based IBM 3090 mainframe that uses IBM's AS2 query language.

They also use several packages locally: Software Publishing Corp.'s PFS Professional Write for word processing, PFS Professional File as a database and Lotus Development Corp.'s 1-2-3 Version 2.2 and Dynamic Microprocessor Associates, Inc.'s PC Anywhere for exchanging information and for troubleshooting.

Access to the database on the mainframe allows salespeople to provide specialized demographic information to the dealer on tire-buying preferences while the dealer is in the store. This means the dealer and the salesperson can tailor product lines and promotions to the dealer's region during the course of a visit.

Moore said the project's modular design will allow Bridgestone Tire to expand it in the future, both on the mainframe and on the laptop.

Bridgestone Tire finished rolling out phase 1 of Bisnet to all of its sales personnel last month. The company expects to have all of its salespeople on-line with the mainframe by October. In the future, Bridgestone Tire may work with Firestone to develop a similar system for Firestone's sales force.

C-bus II pumps up power

Symmetric multiprocessing with Intel Corp. 1486-based systems received a power boost from Corollary, Inc. recently when the company unveiled C-bus II, a higher performance version of its C-bus multiprocessor personal computer bus architecture.

C-bus II reportedly supports fully symmetric multiprocessing. While the original C-bus supported CPU-to-CPU-memory symmetry, C-bus II adds support for fully symmetric I/O and interrupts.

The bus can support up to 16 50-MHz 486 processors and addresses as many as 30 logical CPUs. Extended Industry Standard Architecture, AT bus and IBM Micro Channel Architecture buses can be used as companion I/O buses, the firm said.

Corollary said it will have three different OEM products: the C-bus II specification, a chip-level implementation of the bus and future board-level products. The specification will be available on Sept. 1, 1991 for $500.

Ballmer sings

CONTINUED FROM PAGE 31

areas [CW, July 29]. In the case of Windows specifically, the company said it receives 2,500 calls a day, about 25% of its total support call volume. Of those 2,500 calls, only 15 to 25 are related to the dreaded Unexpected Application Error, Ballmer said.

He said most of the Unexpected Application Error issues are solvable by helping the customer through deinstalling misbehaved terminate-and-stay-resident programs, fixing a disk problem with CHKDSK/F, updating printer drivers and removing unnecessary lines in CONFIG.SYS.

Most Windows calls typically focus on one of three areas: how to get the most out of Windows; setup and memory management; and how to run DOS programs.

Resource room

There are other sources of Windows information. For starters, Ballmer ticked off the following list: 62 Windows books, 57 Compuserve forums for Windows, seven specialized newsletters and journals, and at last count, 22 Windows user groups and special interest groups.

In addition, he said, there are more than 3,100 resellers with 6,000 storefronts, and with good reason. Ballmer claimed that resellers have sold more Windows 3.0 packaged product than any other microcomputer software in history, paving the way for a 79% increase in Microsoft reseller sales in fiscal year 1991 compared with fiscal 1990.

Field Research Corp. surveyed 11,000 random households in the March/April time frame to come up with 216 Windows users. On a scale of one to 10, 77% gave Windows a rating that fell between seven and 10. Novice users were found to be slightly more satisfied than advanced users. It follows then that the No. 1 benefit would be ease of use (46%).

The top two disadvantages were "none" (29%), followed by too much use of random-access memory (11%). "That surprised us. We thought people would be more comfortable buying more memory by now," said Ballmer, adding "Windows is [still] smaller than its erstwhile competition [OS/2]."

Voice of experience

Perhaps most key to Microsoft, the longer the acquaintanceship with Windows, the more likely the user was to recommend the program's purchase, including 98% of users with six months or more experience [see chart page 31].

One half of those users are running Windows on low-end machines, typically 20-MHz Intel Corp. 80286 or 80386SX, with 3M bytes of RAM. That is a little misleading because 66% said they are running on some form of a 386, and the more powerful the processor, the more RAM was used.

Most purchased Windows separately. A full 74% use Windows at work, and of that, 42% tagged themselves as "advanced," 31% "intermediate" and 27% "novice."

The typical hardware/network configuration was further broken down as follows: 45% have modems, primarily 2,400 bit/sec.; 86% use a mouse or pointing device; 95% are linked to printers; and 29% are connected to local-area networks, primarily to access files.

Word processor courts OS/2, Windows users

BY CAROL HILDEBRAND
CW STAFF

Describe, Inc. made bedfellows of OS/2 and Windows when it announced plans to ship both versions of its word processing program in the same box.

Word Processor 3.0 is an upgrade of Describe's previous program for OS/2 Presentation Manager paired with the firm's new Windows word processor, currently in beta testing. Users register a chosen version. If they need to switch, they then reregister to the other version.

Allan Katzen, the company's president and chief executive officer, is targeting corporate offices using both platforms to bulk up the company's user base, which he said was currently around 10,000. The products, which he called nearly identical, offer cross-platform capabilities.

Ease of use was the paramount consideration in designing the program, Katzen said. "We tried to keep the screen as clean as possible," he said. For example, instead of using the ribbon that runs across the top of the screen of most graphically based word processors, such as Microsoft Corp.'s Word for Windows and Lotus Development Corp.'s Ami Pro, Describe uses a toolbox that can be placed anywhere on-screen. The firm also tried to minimize mouse use. Katzen said that although the mouse is a useful tool for familiarizing a user with a product, he believes word processors work better with a keyboard than a mouse orientation.

Paul Duncanson, head of PTD Consulting in Simi Valley, Calif., said that the ease of use was what sold him on Describe in the first place. A former Word user, Duncanson said he was able to figure out the program in a couple of hours without consulting the manual. He also praised the tool kit, saying that it was much more convenient for tasks such as changing font sizes and going from bold to italics.

Describe costs $495.

VGA disadvantages cited

BY ELLIS BOOKER
CW STAFF

A large-screen, high-resolution monitor is superior for prolonged reading tasks and causes fewer visual complaints than a comparably configured IBM Video Graphics Array (VGA) display, according to a study released late last month.

The study was commissioned by Cornerstone Technology, Inc., a San Jose, Calif., maker of high-resolution displays.

The study, which used Sherlock Holmes stories, found a 33% increase in reading speed when subjects used a 19-in., dual-page Cornerstone monitor instead of a 14-in. standard VGA screen, according to study director and sometime Cornerstone consultant James E. Sheedy at the University of California's School of Optometry in Berkeley, Calif.

The Cornerstone monitor has a screen resolution of more than 2 million pixels, or 6.7 times that of the VGA display.

Deflecting some questions about his study's methodology, Sheedy maintained that visual complaints will decrease and productivity will increase "if we can improve the quality of the monitors people are looking at."

Keefe

CONTINUED FROM PAGE 31

Is there a problem? A source who wondered where the latest OS/2 beta-test version was logged on to an IBM OS/2 bulletin board, only to have a message pop up on the screen stating the beta-test versions were being delayed because of "a licensing dispute." An IBM spokeswoman was just as puzzled as we were. The user has since gotten a copy and doesn't know the reason for the message either.

Don't you dare. Sources close to IBM tell us that Microsoft was told two months ago to drop the OS/2 name from the portable version if it wasn't going to include support for Presentation Manager.

Life goes on. After picking up rights to Lotus' CC:Mail, IBM recently announced that it would no longer resell Network Courier, owned by Microsoft subsidiary Consumer Software. Microsoft Senior Vice President Mike Maples said that the remarketing deal didn't generate much new, so IBM's cancellation "doesn't matter much."

As part of the original deal, Consumer Software was developing some technology for IBM as well. IBM executives were uncertain whether that part of the deal would be affected. Consumer Software did build a DOS client for Officevision, which was based in part on Network Courier code.

Maples said there is a contract for further modifications, including "considerable enhancements" for OS/2 2.0, and added that work will continue.

New user group. The inaugural meeting of the Network Courier Users Group will kick off Oct. 4 in Toronto. Attendees reportedly will include Cigna, J. P. Morgan, Chevron, American Airlines, the Royal Bank of Canada and Ontario Hydro. More information is available by contacting George Oliver at the Toronto-based Royal Bank or Laura Jenning at Microsoft in Redmond, Wash.

Monkey see, monkey do. Word has it that IBM's buddying up to Lotus' Notes has not gone unnoticed at Microsoft. A source said that Microsoft's Jeff Raikes has been talking about building both a mail engine and Notes-like groupware capabilities into the system software. We'd like to see that overhead!

What the . . . ? Dizzy from following successive waves of Windows strategy explanations? Well, hang in there for one more. If you've got 53 minutes and a videocassette recorder, Microsoft has put together a tape starring System Software Vice President Steve Ballmer, who will cover the finer points of what makes Windows so great now, and why it will be better in the future. And this time, they mean it.

"The reason you shouldn't expect any more change is that we are not trying to walk a fine political line with IBM anymore," Ballmer said. No kidding. So much so that Phillip Gordon, information center manager at Charles Schwab in San Francisco, quipped that Microsoft may end up pitching New Technology as "a better OS/2 than OS/2."

Peeking through curtains. As the end of summer draws near, the thoughts of Lotus' 1-2-3 users naturally turn in anticipation to the promised delivery of 1-2-3 for Windows. We've got two conflicting reports that we will share with you. On one hand, two sources say they've heard delivery has slipped into the fall — September or October. One source cites irregular problems with printing and data loss. Yet a third source says his latest beta-test version, which is a few weeks old, still has a few bugs.

An early fall ship would not surprise this user. Then again, a further source reports the shipping party is slated for the next few weeks.

Keefe is *Computerworld*'s senior editor, PCs and workstations.

AT&T Safari NSX/20: Worth the expense

Technology Analysis — a roundup of expert opinions about new products. Summary written by free-lance writer Suzanne Weixel.

As its name implies, AT&T Information Systems' Safari NSX/20 80386SX notebook personal computer is a machine that takes on-the-go communications seriously.

Performance: The 20-MHz notebook PC comes with a 40M-byte hard drive and 2M bytes of random-access memory, upgradable to 6M bytes. Communications features include a built-in 2.4K bit/sec. modem and AT&T's Mail Access Plus for Windows. Microsoft Corp.'s Windows 3.0 and MS-DOS are preinstalled.

Ease of use: The 10-in. diagonal, backlit IBM Video Graphics Array LCD is easy to read. The 82-key keyboard is as close as a notebook can get to a desktop keyboard.

Power features: The Safari uses a pair of nickel cadmium batteries.

Design: The stylish Safari weighs about 7.2 pounds and measures 9 by 12 by 1.8 inches. The floppy drive and full-size peripheral connectors are easy to access.

Value: At $5,399, the Safari is expensive, but the combination of communications features and long battery life will be hard to find anywhere else in a notebook size.

AT&T's Safari NSX/20

Reviewers	Performance	Ease of use	Power supply	Design	Value	Overall
Byte 8/91	On par with IBM notebook	Outstanding VGA display	Top performer	Svelte design	Expensive	Extends AT&T 8-mill empire
Infoworld 5/20/91	Excellent	Very good	Excellent	Very good	Satisfactory	7.6*
PC Week 6/3/91	Satisfactory	Good	Good	Good	One of the most expensive	Lots of features, attractive
Users						
Tony Romanus, United Parcel Service, Inc.	■■	■■	■■	■■	■■	Intriguing communications
Bobbie Hogan, Zing, Inc.	■▪	■■	■■	■■	■▪	Exciting communications
Analysts						
Norman Weitzer, Arthur D. Little, Inc.	■■	■▪	■	■▪	■	Nice features, costs too much
Tony Lennon, National Software Testing Labs	■▪	■■	■■	■■	■▪	Pricey but full featured
George Thompson, Datapro Research Corp.	■▪	■■	■▪	■■	■■	Nice communications features
Jaroslaw Cwiza, Professor Technical Reports	■▪	■▪	■■	■▪	■	Packed with features

Key: ■■ Very good ■▪ Good ■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment. *Infoworld ratings based on 1-to-10 scale

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
Robert Wilkins, Rowe Brothers Burnham & Co.	■	■
Craig Ellis, C. J. Lawrence, Morgan Grenfell, Inc.	■	■

Analysts estimate AT&T's 1991 revenue will total $40.5 billion, compared with $37.5 billion in 1990. Net income after extraordinary items is estimated to be $2.8 million compared with $2.7 million in 1990.

AT&T responds

Bill McFadden, director of marketing for Safari:

Performance: In October, we will release an 80M-byte model with a built-in, cellular-ready data/fax modem.

Value: This unit is for the mobile professional who needs to take his office with him on a daily basis. Yes, the list price is higher than those of other notebooks, but you get more with it.

Tandon's 386SX-20: Power-packed potential

Tandon Corp.'s 386SX-20

Reviewers	Performance	Ease of use	Power supply	Design	Value	Overall
Byte 2/91	Flawless	Good toggle keys, screen options	Similar to TI notebook	Not great	Head of the class	High quality
Infoworld 4/29/91	Unusually good expansion	Sharp display, typical keyboard	Has battery savers	Pretty standard	Good price	Advantages over competitors
PC Week 6/3/91	Satisfactory	Good	Satisfactory	Satisfactory	Moderate price	Good performance
PC World 5/91	A poor man's LTE	Similar to Compaq's notebook	Quick recharge	Simple	Good price	Combines price, power
PC Computing 8/91	Easily expanded	Crisp keyboard	Standard	Awkward shift key	Top notch	Feature-packed, reasonable price
Users						
Gary Murrish, Xerox Corp.	■■	■■	■▪	■■	■■	Very good
Paul Parashak, Nihon Kohden America, Inc.	■■	■▪	■▪	■■	■■	Great support, odd keyboard
Bill O'Brien, TRW, Inc	■■	■■	■▪	■■	■■	Reliable
Analysts						
Norman Weitzer, Arthur D. Little, Inc.	■▪	■	■▪	■▪	■▪	Nonstandard keyboard

Key: ■■ Very good ■▪ Good ■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
Joe McGlone, McGlone & Co.	●	■
Stuart Linde, Fahnestock & Co.	■	■

Tandon Corp., a major PC vendor in Europe, is located in Mourepark, Calif. Financial ratings are based on telephone survey of analysts who follow the company.

Tandon responds

Tom Dickinson, director of technical marketing:

Ease of use: Because the unit is so small, we had to make decisions about where to place certain keys. The key placement meets the approval of most customers.

Power supply: The notebook currently cannot be charged while it is running on AC power, but we may change that in the future.

Tandon Corp.'s 386SX-20 is a powerful little unit packed with features and expansion potential.

Performance: The unit's 20-MHz CPU and standard 2M bytes of random-access memory are upgradable to 16M bytes. Users can add either a 30M- or 60M-byte hard drive. Reviewers also noted that there is an expansion unit available that attaches to a port on the back.

Ease of use: The 9-in. diagonal, backlit LCD is easy to read. Users can even change the screen display font to boldface. The keyboard, however, has a nonstandard layout. The caps lock key, for instance, is easy to bump at the bottom left, and the backslash key and cursor up key are not where users might expect.

Power features: Without special power-saving features, the notebook provides about two hours of battery life. There are three levels of power conservation, including standby mode. Recharging takes about two hours and can be done while using the AC adapter. Extra batteries cost $59.95 each.

Design: The unit weighs about 6.5 pounds and measures about 8½ by 11 by 2 inches. The leather carrying case has no room for accessories.

Value: The Tandon 386SX-20 provides lots of power in a lightweight package. The expandability options are an added bonus. It costs $3,495.

NEW PRODUCTS

Software applications packages

Gupta Technologies, Inc. has created Quest, a Microsoft Corp. Windows 3.0 environment tool for accessing SQL databases.

Quest provides a point-and-click method of updating tables from multiple source databases, copying tables from one SQL database to another and transferring data between itself and other Windows applications via Dynamic Data Exchange.

The tool costs $495.

Additional connectivity software is required for accessing some database formats.

Gupta Technologies
1040 Marsh Road
Menlo Park, Calif. 94025
(415) 321-9500

Integrated Systems, Inc. has begun shipping Xmath, an object-oriented mathematical analysis and scripting language for the X Window System environment.

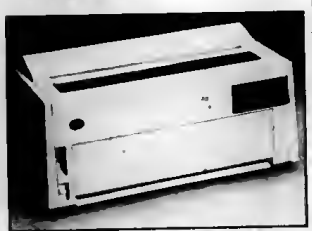
Xmath offers an interactive method for producing optimized number-crunching algorithms. It also automatically generates plots, according to Integrated Systems.

The interface offers on-line Help, point-and-click graphics annotation and a source-level debugger.

The mathematical analysis and scripting language costs $2,495 for a single-user license. Universities can purchase a single-user license for Xmath for $250.

Integrated Systems
3260 Jay St.
Santa Clara, Calif. 95054
(408) 980-1500

Peripherals



The IBM 4226 Model 302 ***connects to IBM midrange machines and RS/6000 workstations***

Lexmark International, Inc., a manufacturer of IBM printers, has introduced new models featuring straight paper paths to reduce paper jams.

The IBM 4226 Model 302 connects to IBM midrange computers and RISC System/6000 workstations with an ASCII attachment, as well as to personal computers. The printer costs $2,295, according to the company.

The IBM Personal Printer Series II dot-matrix printer offers narrow- and wide-carriage versions. It is a nine-wire printer, like the 4226. Pricing ranges from $499 to $699.

Both models allow users to tear off documents immediately upon completion and automatically return the paper to correct print position.

Lexmark International
740 New Circle Road
Lexington, Ky. 40511
(606) 232-7514

Hercules Computer Technology, Inc. has recently released a graphics board for Micro Channel Architecture personal computers.

The Graphics Station MC offers 16.7 million 24-bit colors and accelerated graphics execution.

It also supports displays of up to 1,024-by 768-pixel resolution and screen refresh rates of over 70Hz, according to the company.

The board includes 1M byte of video random-access memory for $1,395.

Hercules Computer Technology
921 Parker St.
Berkeley, Calif. 94710
(415) 540-6000

Macintosh products

Silicon Beach Software, Inc., an Aldus Corp. subsidiary, has announced Supercard 1.6.

Supercard is a multimedia authoring application for the Apple Computer, Inc. Macintosh. Version 1.6 supports Apple's System 7.0 operating system, including Balloon Help and Truetype fonts; it also includes an Online Supertalk script-language Help system.

The product costs $299.

Silicon Beach Software
Suite J
9770 Carroll Center Road
San Diego, Calif. 92126
(619) 695-6956

International Business Software has announced Dataclub 2.0, an enriched version of its file server software for the Apple Computer, Inc. Macintosh.

The new release will offer full support for Apple's System 7.0 operating system. Performance will also be significantly enhanced, according to the company.

The enhanced file server software, scheduled for shipment this month, is priced from $175 for a single-user license to $3,250 for a 50-user version. Upgrades from the previous release are free of charge.

International Business Software
Suite 314
1270 Oakmead Pkwy.
Sunnyvale, Calif. 94086
(408) 522-8000

NAS FROM DIGITAL.

Sun® is already open, you say? That depends on how you define "open." If you define it in terms of SPARC®-based technology, then yes. If you limit your view to just one operating system, then yes again.

But if you define open in the true sense of the word – computers and applications working together across a wide range of operating environments and hardware platforms – then you might conclude Sun isn't quite open.

At least not without Network Application Support (NAS). Digital's approach to open computing that employs industry standards to integrate systems and applications from dozens of different vendors. Sun included.

By standards, we don't mean a handful of interfaces and protocols, but a comprehensive set of products and services implemented and refined over the course of years.

In networking, for example, we pioneered the development of Ethernet, and have implemented more standards than anyone, including FDDI, TCP/IP, OSI and the X family.

In software, Digital's technology is the basis for OSF's DCE and MOTIF®. We've implemented STDL, [redacted] fax [redacted] the [redacted] we were [redacted] in unifying over 20 [redacted] behind a single set of new standards.

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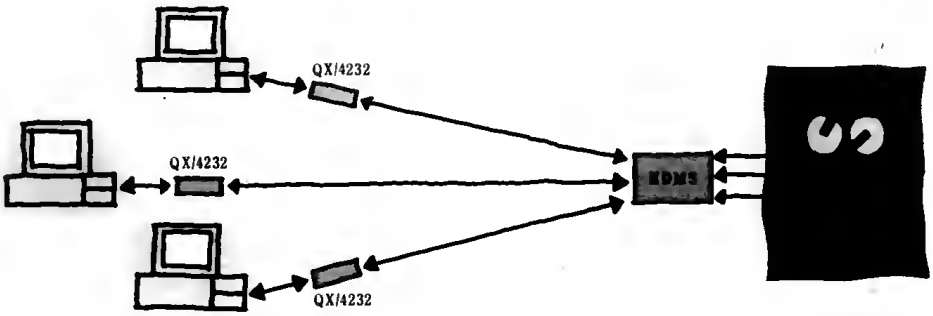

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COMMENTARY

Elisabeth Horwitt

That elusive gold thread

During a recent telephone conversation, Irwin Sitkin, the industry guru and former Aetna chief information officer, asked plaintively, "Where are the big blockbuster applications? Where's the next Sabre or American Hospital system? I don't seem to see them coming down the line."

When you think about it, that's a pretty serious indictment of the information systems and communications professions.

Seven or eight years ago, everybody was dazzled by the spectacle of certain savvy businesses successfully tying their customers to them via "golden threads." These were communications lines that delivered value-added services and information to the customer's terminal, giving a business that extra edge over its competitors — and ideally making it tough for the customer to switch to a competitor.

American Airlines was the first to win travel agents' gratitude — and business — by making it a lot easier for them to make reservations via an electronic system called Sabre.

American Hospital Supply pioneered the idea of providing hospitals with terminals and software that connected them directly to American Hospital's system, allowing them to order

Continued on page 47

LAN switches unsnag jammed nets

BY JOANIE M. WEXLER
CW STAFF

As companies continue to heap traffic onto local-area networks, their LANs are getting congested. Particularly clogged are heavily populated 10M bit/sec. Ethernets, which can have lower throughput than 4M bit/sec. Token Rings because of Ethernet's inherently less efficient network access method.

Among the options for keeping performance humming are emerging LAN switches, which create a virtual path between any two local network nodes with near-real-time throughput. Switching, which allows parallel network "conversations" among collocated LANs, overcomes the slowdown caused by Ethernet's network access method, under which each node on the network contends for transmission time.

Switching is serving as network Drano for several companies wary of introducing more bottlenecks with bridges and routers and without the budget to install 100M bit/sec. Fiber Distributed Data Interface (FDDI). Bridges and routers, users pointed out, slow response time because they pause to examine address and/or protocol information.

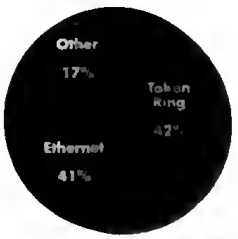
One Ethernet switch user, however, said he will still implement a router at "a point of control, where you need to subnetwork or add filtering for restricting access."

Several firms using a product called Etherswitch from San Jose, Calif.-based Kalpana, Inc. have cited dramatic response-time boosts. Jim Shearer, chief data communications engineer at Western Atlas International, Inc., an oil field services company in Houston, said that because of bandwidth-hungry computer-aided design (CAD) applications and growing numbers of personal computers attaching to its network, his firm was recently seeing an average 15% to 20% utilization of available bandwidth on the backbone with peaks in the 60% range.

Continued on page 46

Staying power

Ethernet LANs will hang in there: They're getting cheaper by the minute, and products are emerging to breathe more performance into them



Percent of LAN nodes installed worldwide
Total: 84 million

Source: Gartner Group, Inc., Local Area Communications Market Data Division

Chemical maker opens DEC/IBM gateway

ON SITE

BY ELISABETH HORWITT
CW STAFF

RICHMOND, Va. — About 18 months ago, Albright and Wilson Americas, Inc. faced what is rapidly becoming a classic situation for manufacturing companies. The chemical maker wanted to establish bidirectional, reliable electronic links between engineering systems that run on Digital Equipment Corp. hosts and business systems that run on IBM hosts.

Project engineers need to look up the financial status of their projects on the business system, while purchasers need access to engineering drawings and equipment lists for such tasks as establishing bidding packages to suppliers, said Michael Thompson, formerly Albright's director of information systems and now a business analyst at the company's industrial chemicals group.

Moving both engineering and business systems to one type of host was out of the question because the "best engineering department software ran on a DEC VAX, while the best commercial system was on an IBM AS/400," Thompson said.

Albright started looking for a gateway that would allow users to exchange documents and messages between the two systems. After a multivendor evaluation process, the chemical firm chose the Forest Network Processor from Forest Computer, Inc. in Okemos, Mich.

Since that time, Albright has migrated to Forest's newer gateway, the Connection System.

Without the gateway, "we would have had to have dual commercial systems: one to support engineers, one to

To page 45

Chip Mitchell

Albright's Thompson: *Gateways have enabled Albright to streamline costing*

IBM/Microsoft split rattles users' view of LAN Manager

BY JIM NASH
CW STAFF

Microsoft Corp. may have aimed at reducing user confusion two years ago when executives began beating the drums about a common version of its LAN Manager network operating system, but the effort seems to have fallen shy of the mark.

Several managers of LAN Manager or LAN Manager-based systems contacted recently said they are less certain about their networking future. They cited IBM's budding courtship with Novell, Inc., maker of the Netware network operating system, IBM's own lack of direction for its LAN Server product and the strained relationship between Microsoft and IBM.

"We can't live on promises," said Tony Berger, director of information systems for two of the three operating units of holding company Simpson Investment Co. Promises are all Berger said he is getting from IBM as he works to ensure that LAN Server, based on Microsoft's LAN Manager, operates on Compaq Computer Corp. workstations and those of other IBM clone makers. LAN Manager does work with Compaq machines.

He said IBM's OS/2 Extended Edition on LAN Server does not operate on Compaq machines. With Simpson planning to link a fifth remote site with its Seattle headquarters using Compaq machines, Berger said the company is deciding between LAN Manager and Netware.

A vote in favor of LAN Manager does not guarantee peace of mind, said Jim Hicks, systems administrator at American Suzuki Motor Corp. in Brea, Calif. Microsoft has standardized on Server Message Block (SMB) as its interoperability protocol between servers, workstations and peripherals, he said, and Suzuki has followed suit.

IBM has not clearly indicated whether it will do the same, Hicks said. Added to that, he said, is the worry that LAN Manager could grow isolated, making SMB a less strategic option in heterogeneous environments.

Although Berger said the odds-on favorite now is LAN Manager, Novell is a contender. Berger and other network managers said the Microsoft/IBM split is a concern. Microsoft recently said convergence of the two operating systems will stop short of user interfaces and systems administration.

"From a philosophical point of view, [incomplete convergence] makes a difference to users," said Abdul Chaudhary, director of IS at Foremost Insurance Co. in Grand Rapids, Mich. Chaudhary said users of LAN Manager-based systems want few differences between the OEM's versions.

Chaudhary said Foremost plans to decentralize from its IBM 3090 Model 300S and is looking at its predominantly LAN Server networks. It has three or four Netware networks, he said, and will consider them as replacements for LAN Server. He, too, cited the uncertainty of IBM and Microsoft's future relationship as a factor.

Macintosh steps into X Window System arena

BY JOANIE M. WEXLER
CW STAFF

Developments in the X Window System arena have continued to thrive over the past month. Perhaps most significant, two companies — Cayman Systems, Inc. and Intercon Systems Corp. — have brought Apple Computer, Inc. Macintosh personal computers onto the X network.

X Window is public domain software installed on computers and intelligent terminals. X "server" software running on a PC, workstation or X display terminal allows users to access multiple application programs residing on many computers across a network running X "client" software. Users can view the various application programs in separate windows on one screen simultaneously.

With last month's announcements, the Macintosh becomes another X client resource for users running X servers.

Amanda Walker, a project leader at Visix Software, Inc. in Reston, Va., has been beta-testing Intercon's $295 Planet X for several months. Walker said developers in her firm have been using Planet X to access documentation such as user manuals and technical references from their desks.

"It's a lot easier to look at program code and documentation on one screen," Walker said, adding that previously, users jaunted to centrally located Macintoshes to access their resources.

"I know there is a lot of interest for X on the Mac," she said. "There are many things that are impossible or impractical to do on anything other than the Mac."

Walker has not yet committed to purchasing Planet X and said she still intends to test Cayman's $495 Xgator software, which allows network administrators to manage Macintosh networks and support users from an X server workstation. Both vendors said they plan to ship their software this month.

On the X display terminal front, Network Computing Devices, Inc. in Mountain View, Calif., recently announced a 19-in. color display based on the Motorola, Inc. 88100 reduced instruction set computing (RISC) processor.

According to Eileen O'Brien, manager of the terminals program at market research firm International Data Corp., based in Framingham, Mass., the Network Computing Devices move "is significant because NCD has not been able to compete in many bids because it has not had a 19-in. color product."

O'Brien said RISC processors "are likely to be on X shoppers' bid lists" because of the increased performance often resulting from RISC technology. However, Network Computing Devices competitor Tektronix, Inc. last month announced a non-RISC-based 19-in. XP29 color X terminal that it said improves performance by 50%.

X terminal performance, measured in units called "X stones," has been cited by the following competing vendors for their 19-in. color models, according to O'Brien: Tektronix, 63,000 X stones; Hewlett-Packard Co., 59,000 X stones; and IBM, 38,000 X stones. Network Computing Devices is reportedly not making public X stone numbers on its new terminal.

IBM enhances Netview tool

BY ELISABETH HORWITT
CW STAFF

WHITE PLAINS, N.Y. — IBM has enhanced a key piece of its Netview-based automated system management strategy with the announcement of IMS Automation Option/MVS (IMSAO).

Like its predecessor, the IMSAO for Automated Console Operations Solutionpac, the new product is said to allow an operator on a Netview terminal to control multiple IMS subsystems on one or more MVS systems.

Also like its predecessor, IMSAO/MVS is said to monitor IMS systems for errors and failures as well as automatically initiate recovery actions. Capabilities include automatic system start-up, shutdown, monitoring and Extended Recovery Facility surveillance/takeover.

In addition, IMSAO/MVS is said to monitor and initiate error recovery automatically for Inter System Communication and Multiple Systems Coupling communications links.

The product is said to do the following:

- Start, stop and display IMS message regions.
- Schedule regular start-ups and shutdowns with service periods.
- Define initialization conditions that automatically trigger a start-up or shutdown.
- Display and obtain information about critical messages.
- Broadcast messages to subsystems.

The product runs as an application under IBM's systems automation product, Automated Operations Control/Multiple Virtual System or Solutionpac. For new IMSAO/MVS users, the basic license costs $15,800, and the Distributed System License costs $11,850. For current IMSAO Solutionpac users, the upgrade costs $7,200. It is available now.

AT&T exchanges make way for new switch

BY JOANIE M. WEXLER
CW STAFF

AT&T is quietly paring its private branch exchange (PBX) line and bringing out a new PBX-to-key telephone system liaison product that will replace the firm's low-end System 25 switch, according to consultants and analysts.

Technology Investment Strategies Corp. senior analyst Doreen Austin said the company is taking a $1.5 billion write-off to revamp its PBX product line. She said the move includes discontinuing the low-end Merlin 2, Merlin Plus and System 25 and the midrange System 75 and 85 switches.

In addition, AT&T last week replaced the president of its low-end switch business unit, Jack Bucter, with Jerre L. Stead, former chairman of Palatine, Ill.-based electrical and electronic products manufacturer Square D Co.

AT&T spokeswoman Jane Multin acknowledged that the company is simplifying its PBX line and anticipates downsizing its staff. However, she said, "we haven't yet announced any new switch."

Austin added, though, that she has brochures on the forthcoming low-end PBX — dubbed the Merlin Legend — and that it is already being marketed. She described the Merlin Legend, which hooks the company's low-end key systems to its core, high-end Definity PBXs, as a positive move that "AT&T should have done five years ago" for allowing interoperability among its telephone switches.

Another consultant, who asked not to be identified, confirmed that AT&T plans to hold a series of analyst briefings on the Merlin Legend as early as this week and supported Austin's statement that AT&T is marketing the product to some firms.

A possible reason AT&T has been closemouthed about the product, the consultant said, is that the firm might have been "somewhat surprised" by competitor Northern Telecom, Inc.'s Meridian 1 Option 11, a low-end PBX that debuted at the International Communications Association conference in May. "AT&T might have delayed its announcement to see if the Merlin Legend was going to be competitive," the consultant said.

Austin said she interprets AT&T's PBX revamp as a strategy to help finance the AT&T Computer Systems/NCR Corp. merger. According to Austin, manufacturing has already ceased on Release 2 Version 2 and Release 2 Version 3 of both the System 75 and the System 85. Multin said AT&T support will continue on all switches.

Gateway

CONTINUED FROM PAGE 43

support the business users," Thompson said. "That would have been $100,000-plus in application costs plus additional VAX hardware."

In addition, the ability to send historical cost information electronically from the IBM system to the engineering bid-support system helped Albright reduce its total bid generation cycle from three months to two days, Thompson said.

The gateways have also let Albright streamline its costing process. Costs developed in engineering applications can now be transferred electronically to Application System/400-based financial applications for tracking, Thompson said.

Among the features that Albright considered essential for its gateway was the ability to "run natively without having to add hardware or another layer of software to a VAX or IBM host," Thompson said. Communicating via the gateway, "a VAX looks like an AS/400 to an AS/400, and an AS/400 looks like a VAX to a VAX," he added. The product also acts as a gateway between Albright's Decnet-Ethernet and IBM Token Ring local-area networks.

Another key feature was interactive communications, which, for example, allowed an engineer to update information on the IBM host from his DEC workstation, Thompson said. Also important was keyboard mapping between the wide variety of workstations used at Albright: Once the Forest gateway was set up, operators could use 90% of their native workstation commands to go after either type of host, Thompson said.

Albright has completed implementation of Forest gateways to interconnect business systems at its headquarters here with both the corporate engineering group in Toronto and the U.S. engineering group in Charleston, S.C. Two months ago, the system also began supporting communications between the Toronto and Charleston engineering groups.

The latter link has supported some valuable synergies between the two groups, Thompson said. "There is particular engineering expertise in Toronto, which we need for plant design modifications in the U.S. Conversely, an engineer in Charleston may be familiar from past experience with the design to be used in a sodium chlorate plant in Vancouver."

The phase now under way involves a job costing application that will let U.S. engineers monitor project expenditures and committed costs on the Richmond business system.

LAN switches

FROM PAGE 43

"I was getting calls from people who said downloading CAD files was taking 20 minutes," he said. "FDDI was an option, but it cost too much."

Shearer, who has been running the Etherswitch for seven weeks and has committed to purchasing it, said his traffic levels are "down well below 5% with peaks in the 30% range. I don't get any more phone calls." He added that he tested the switch against a bridge, and the bridge was 15% slower.

Kalpana co-founder and Vice President of Marketing Larry Blair explained that "for remote networking, we hook up to third-party products such as remote routers and bridges." He added that if two devices, such as powerful workstations, "can't move 10M bit/sec. between them, FDDI is the correct approach."

LAN software vendor Novell, Inc. decided last December that the Ethernet segment serving its technical support group was saturated and turned to the switching method to breathe more life into it. The company runs a Netware-based database with 150 users hooked into it.

"We hit about 60% utilization on that network segment; for Ethernet, that's not workable," explained John Stevenson, data communications administrator at the Provo, Utah-based firm. "The biggest advantage with the switch is that we can keep a large work group on one logical Ethernet segment. FDDI would probably give better performance, but the cost would be at least 10 times as much." Novell purchased two seven-port Etherswitches in March.

Clement Sciammas, MIS director at Laser Master Corp. in Eden Prairie, Minn., runs Ethernets that shifted from supporting 100 to 400 users during the past two years. "We've seen a 25% to 50% drop in backbone traffic and a 20% increase in file-transfer speed" since using the Kalpana switch, he said.

As an internetworking alternative, Etherswitch raises the ante in the bridge/router market, said Marty Palka, senior networking industry analyst at San Jose's Dataquest, Inc. "There will always be people who buy strictly on performance, and the switch reduces transient delay inherent in bridges and routers."

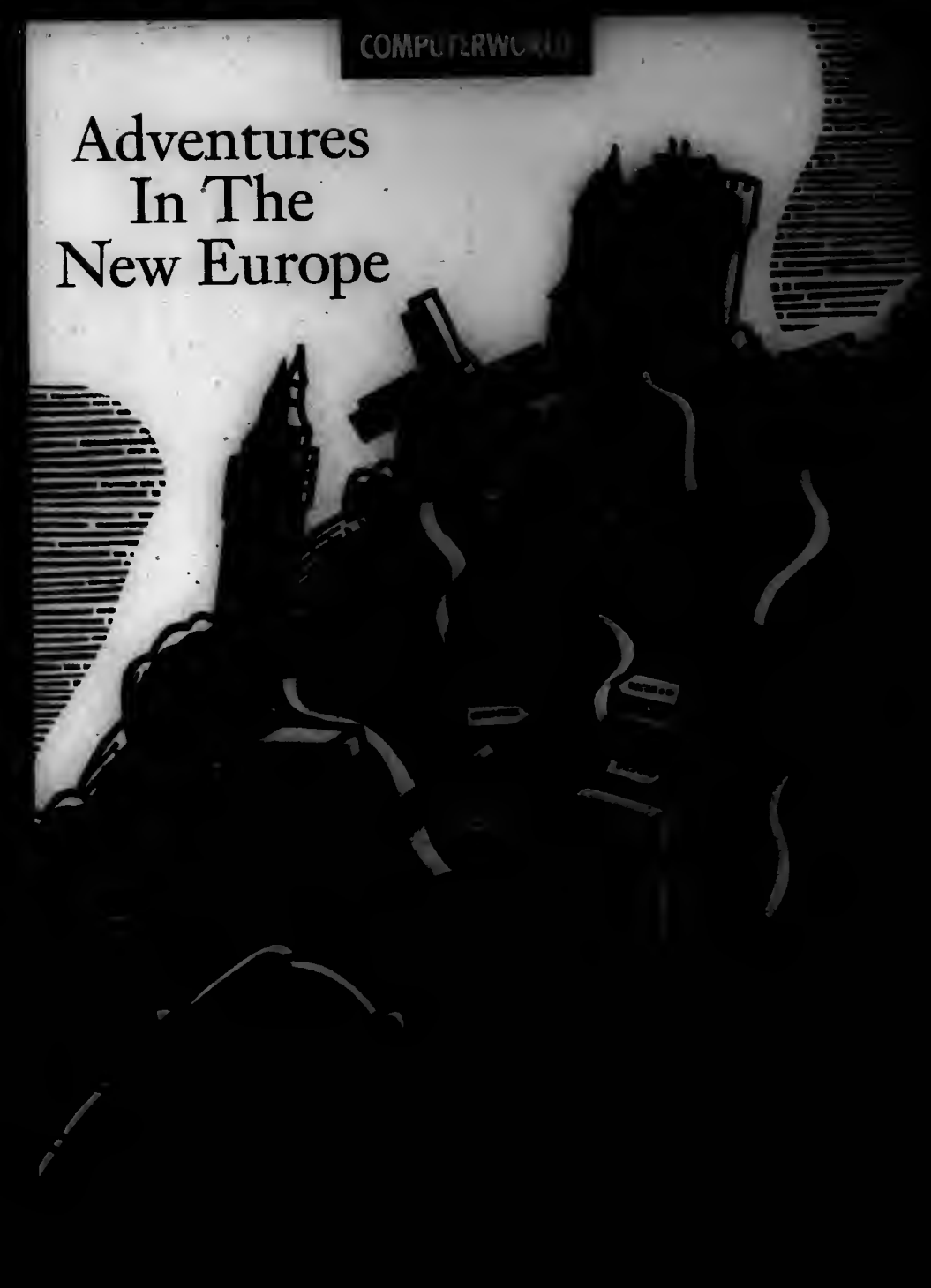
> "THE BIGGEST ADVANTAGE with the switch is that we can keep a large work group on one logical Ethernet segment."
>
> JOHN STEVENSON
> NOVELL

A potential Etherswitch competitor is under construction at Synernetics, Inc. in North Billerica, Mass. The firm's $24,250-and-up Lanplex products give each workstation its own 10M bit/sec. chunk of bandwidth and concentrate the traffic over three logical FDDI networks (300M bit/sec. worth of bandwidth) in a hub. Originally scheduled to ship in third-quarter 1991, the product has been delayed until first-quarter 1992, the firm said.

In addition, chip maker National Semiconductor Corp. said it is shipping chips that would-be Kalpana competitors could use in switching products.

On the Token Ring front, the Maestro Intelligent Switching Hub from Bytex Corp. in Southboro, Mass., is "complementary, not competitive" to the Kalpana box, said Bytex Director of LAN Marketing Joe Skorupa. Maestro allows users to reconfigure networks remotely without visiting the wiring closet, but the product "doesn't do any routing of traffic on a real-time basis," according to Skorupa. Maestro is slated to support Ethernet by the end of the year.

Last month, Kalpana announced a $19,995 eight-to-15-port version of Etherswitch with Simple Network Management Protocol support to complement its $12,995 seven-port version. Blair said the Kalpana customer base is currently at approximately 200.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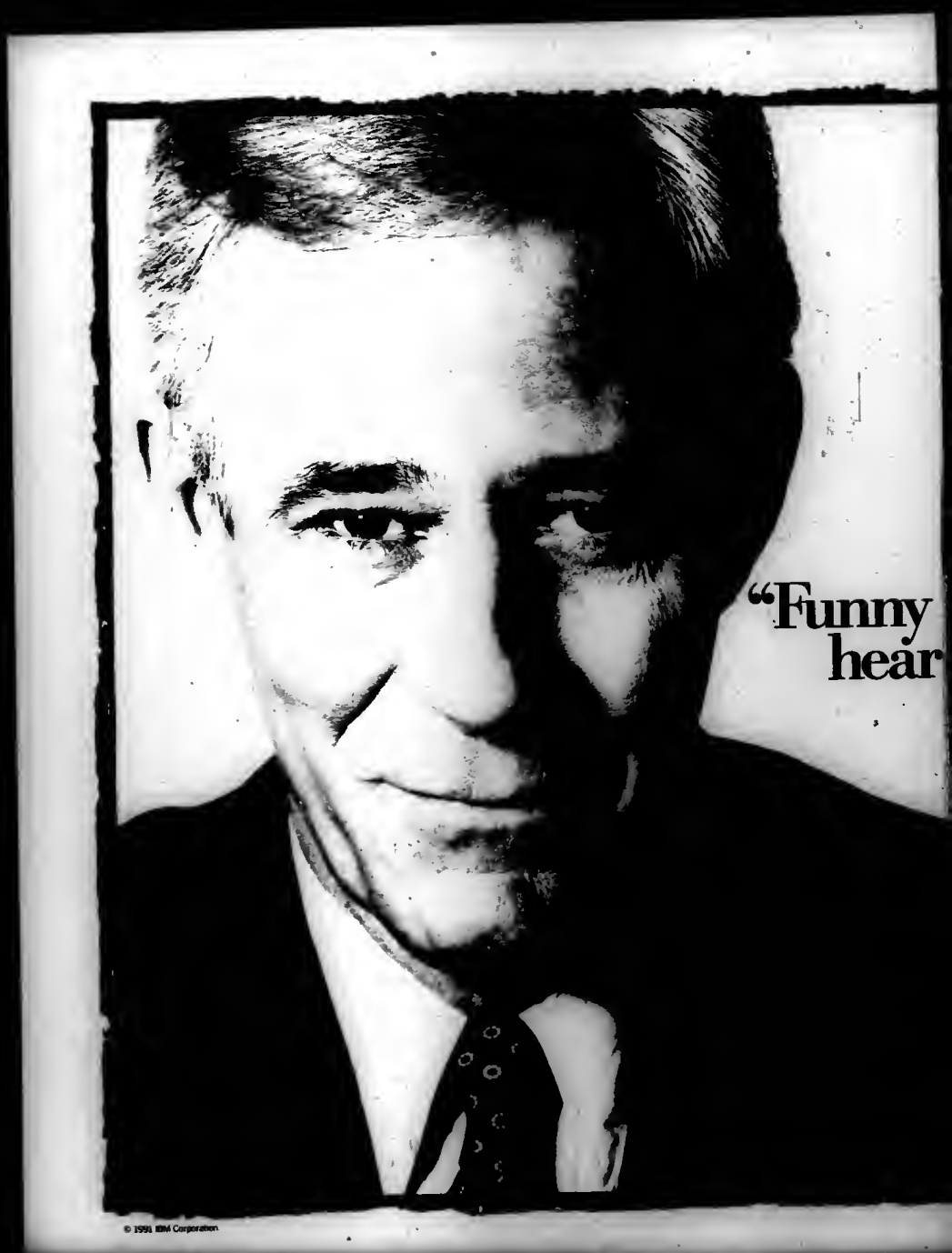

about IBM, as they get older their ing seems to be improving."

"I run our company's data center, and I've known IBM since the punch card days. Back then, they would show up and I'd take notes. How different today. Now I go to their meetings and they take notes.

"If they're planning a new system or creating new software, they'll ask me what I think of it, and they don't fish for compliments.

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To Our Readers

While traveling through the UK on assignment for this report, one of our reporters chanced across a scene that is, in many ways, typical of Europe today. At Cambridge University, which dates back to the 13th century, installation work on a fiber-optic backbone network had unearthed the remains of some buildings demolished in the 1820s. A sign posted next to the construction trench explained the find and noted — perhaps humorously, but perhaps not — "It is unlikely the fiber-optic duct will reach medieval levels."

Old and new are constantly bumping up against each other like that, particularly as firms try to reconcile strategies for business operations in the New Europe with some of the more resistant cultural and technical realities.

What this report focuses on is how information systems managers are grappling with those contradictions and what challenges and opportunities lie ahead, as the business and technical landscape continues to change.

Because that, of course, is the other tricky aspect to Europe these days — the things that are changing are doing so very fast. Look away for a short while and the next time you turn back everything is different: There are half a dozen new European Community subgroups, several dozen new vendor alliances and Frankfurt's Intercontinental hotel is serving up Japanese-style breakfasts.

We won't pretend that this report provides a comprehensive picture of either Europe or IS operations there. Trying to do that would be, as the Italians say, like "making a hole in water" — in other words, impossible. We do hope, though, that some of the information in the pastiche of facts, figures, anecdotes, impressions and experiences collected here will make planning for your first, or next, stage of European expansion a bit easier.

On-site reporting for this special section was handled by a team of senior *Computerworld* staff members: Elisabeth Horwitt, senior editor, networking; Michael Alexander, senior editor, advanced technology; and Ellis Booker, Midwest bureau chief. They spent time in the UK, Belgium, Germany, Switzerland, France and Italy, collecting information from both European and U.S. companies, as well as a wide assortment of other experts. As is fitting for a report on a part of the world where the byword of the day is unification, most of the articles that follow are team constructions compiled and written by one or two people from the contents of multiple notebooks.

— Joanne Kelleher

A Look Inside

COMPUTERWORLD: IS IN EUROPE

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Cover Illustration
Normand Cousineau

A Landscape in TRANSITION

Normand Cousineau

There's a question that Gordon Monro, general manager of information technology at DHL Systems, Inc. in Brussels, asks his vendors, and it says a lot about the way in which the European landscape has changed and is changing.

What Monro wants to know when potential suppliers come calling is, "Can you support me in Reykjavik, [Iceland,] Athens and Brussels?"

As Monro's question indicates, Europe is a more sprawling expanse these days than the mental image many of us carry around would suggest. Furthermore, the geographic term is open to multiple definitions, depending upon whether it is being discussed in the context of the official European Community (EC), post-Cold War border openings or the span of a particular business.

The EC, which is in the process of creating a unified market with common trading rules and open borders under the administration of the European Commission, currently consists of 12 countries — Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the UK. Existing cheek by jowl with the EC, however, is a whole other roster of European nations not officially bound by EC rulings and directives but nonetheless impacted by its activities. These include both the member national of the European Free Trade Association — Austria, Finland, Iceland, Norway, Sweden and Switzerland — and a number of Eastern European nations that are participants in the wave of democratization and westernization sweeping the continent.

For U.S.-based corporations, these changing definitions and conditions spell both opportunity and challenge. Clearly, there are massive new markets emerging as a fragmented Europe begins to reassemble itself into a more unified entity. Just as clearly, however, tapping into these emerging markets will require a whole new organizational and technical game plan.

Jeremy Frank, a program manag-

er at Gartner Group, Inc., compares the current situation in Europe with the period of post-Civil War expansionism in the U.S. "I imagine," he says, "that it is like being in the U.S. around 1870, when everyone was poised on the Appalachians, ready to run for the Pacific." The difference is that in Europe, the rush is moving in many directions, not just one.

Frank is speaking mostly in the context of the telecommunications market, but his analogy works in a much broader sense.

U.S.-based corporations anxious to stake a broad claim on the market opportunities taking shape are facing a confusing jumble, fraught with contradictions.

To begin with, there can be disconcerting lags between EC proclamations of change and actual changes on the ground.

As Len Elfenbein, president of Little Falls, N.J.-based telecommunications consulting firm Lynx Technologies, Inc., explains, "The EC has growing clout, but that clout is not really legislative or legal — it's more in the nature of public pressure."

Most of the statements the EC issues are recommendations, he says, not binding regulations, and many are subject to wide interpretation.

As a result, "some countries comply right away, while other administrations say they need time to study the issues."

Thus, it can still be very difficult, even within EC member countries, to construct and manage communications connections among facilities in several nations. When you try to add business partners and customers to the mix, it can get even worse.

For example, although a European standard does exist for electronic data interchange (EDI), its use is sporadic at best,

"U.S. companies need to give [information technology] organizations abroad the same freedom they give business ventures — to be accountable for decisions."

Mario Pimentel

since many companies use either industry or country standards for EDI (see story page 21). An even more basic problem is the fact that, right now, EDI is essentially a localized phenomenon. According to Michael C. Chesher, European marketing manager of business communications and core systems at General Electric Information Services Ltd. in London, only 20% to 25% of current EDI traffic in Europe crosses any country borders.

Then there is the problem of standardizing the work methods and data handling practices of information systems organizations across Europe. As Mario Pimentel, an analyst at Nolan, Norton & Co. in Germany, observes, companies often come into European markets by acquiring companies, and then they find it is hard to bring the IS operations of the acquisitions into their fold.

"U.S. companies need to give [information technology] organizations abroad the same freedom they give business ventures — to be accountable for decisions," Pimentel says. "They must likewise not lose sight of the individual needs of these departments for the greater 'good' of having a common core of applications and procedures."

That can be a tough prescription to follow, however, when there is a pressing need to get a full picture of how well the company is doing across Europe and it must try to reconcile not only input from disparate systems but also different bookkeeping methods and data definitions. Furthermore, as Terry Osborne, System Software Associates, Inc.'s London-based vice president for Europe, points out, the im-

Likely Locales

Are there any spots that seem like particularly good locales for information systems operations?

Mel Horwitch, dean of Theseus Institute, an MBA school in the south of France, favors a southerly direction. Horwitch sees a great deal of promise in a land arc bordering the Mediterranean, "stretching from Barcelona through Marseilles to Sophia Antipolis and Nice, all the way to Milan," he says. Sophia Antipolis is a sprawling research and development complex near Nice and Cannes, where a number of European and U.S. companies have set up lab facilities. Although a mixture of vendors can be found there, the population leans toward telecommunications types.

Certain parts of England are also hotbeds of research activity and pretty good sites for firms that want to be in touch with what's going on, Horwitch says. The areas west of Heathrow and up toward Cambridge are good alternatives to London. Southern Germany and the area around Geneva are also worth a look, he says, as well as "parts of Northern Italy and Spain."

Kirtland Mead, a vice president at CSC Index, Inc. in London, suggests the Low Countries and the UK because they are the places where it is easiest to build a team. "What the Low Countries have going for them," he says, "are language skills and centrality." Tom Moore, director of European operations at the consulting firm DMR Group, Inc., picked Gouda, the Netherlands, as his headquarters site not only because of the central location but also because of the "easy communications and transportation and small overhead."

Actually, IS operations can be almost anywhere, as long as you can attract staff, Mead and Horwitch say.

However, they differ on the southern tier. Some areas of it that Horwitch sees as promising, Mead rejects out of hand. "No one is going to put a central IS facility in Italy . . . or Spain or Portugal," Mead says. "These just aren't international environments. They want to go to places that are cosmopolitan. Brussels, London, Geneva, Frankfurt and Nice are all logical spots.

Mead offers another selection method: If you're looking for locales rich in potential IS staffers, he says, check out the locations of government-sponsored vendors in France. Some of these firms may be bleeding money, but they are excellent breeding grounds for talent.

— Joanne Kelleher

pending arrival of 1992 is prompting many companies to rethink their manufacturing, logistics and distribution arrangements.

Up to this point, Osborne says, many companies tackled manufacturing on a country by country basis and allowed each country manager to select whatever systems seemed most suitable for the specific location. But, he says, this kind of arrangement "doesn't make sense in single market." Instead, companies are moving to fewer "centers of excellence" and standardizing on "core systems" — a strategy that makes it easier to share both data and staff across multiple locations.

Long way to go

This move toward organizational structures that basically mimic the emerging supranational economic structure of Europe has been going on quietly for a few years, but there is still a considerable distance to travel.

For one thing, it can be very difficult to find or create software that satisfies all of the operating requirements of sites in various countries. Furthermore, locating the programmers required to handle necessary alterations can be a problem, since competition for skilled IS talent is extremely high.

Companies are moving to fewer centers of excellence and standardizing on core systems

There are, however, an increasing number of service providers able and anxious to help with integration of complex systems. A number of European service companies are aggressively moving to expand their base of operations across Western Europe, and there are already several large U.S.-based service providers with a strong presence across the region.

In addition, joint ventures and collaborative agreements between European and U.S. companies in services and software hold out the promise of easier times to come in reconciliation of systems and systems practices. IBM, for example, has reportedly spent several hundred million dollars over the last couple of years on investments in local software and services companies.

Mel Horwitch, dean of management at Theseus Institute, an MBA-level business school in the south of France, says he believes that collaborations of this type are the positive counterbalance to some of the difficult situations that are prevailing in Europe right now.

For example, Horwitch says, the need to build a modern infrastructure for Eastern Europe certainly has the potential to derail some of the progress being made, particularly in Western Germany. But despite the drain on resources, he says, the challenge actually seems to be having an energizing and unifying effect.

"The impact of Eastern Europe is now being discussed a lot because it is costing more than people ever realized," he says. "But if you look at what is taking place, it is actually causing companies to come together and join forces. For example, France Telecom and Ameritech have a joint venture in Poland." Furthermore, some of the Eastern European countries are progressing much faster than expected. In some cases, he says, "they aren't just developing; they are leapfrogging."

Both Theseus Institute and the area in which is it located — a huge science park called Sophia Antipolis — are indicative of the positive synergy currently taking place in Europe.

Theseus, which enrolled its first MBA class two years ago, is heavily sponsored by France Telecom, but it also draws support from companies across Europe. Both its faculty and its student body are international in composition. And the degree it grants is an MBA in "innovation, business strategy and information technology."

Sophia Antipolis, located about 25 minutes from the Nice-Cote d'Azure airport, is a sprawling development heavily populated with research facilities, standards bodies and networking facilities. IBM has operations there, as do Digital Equipment Corp., Texas Instruments, Inc. and a host of other U.S. vendors. The European Telecommunications Standards Institute has offices there, and Air France runs its reservations system out of a center in the area.

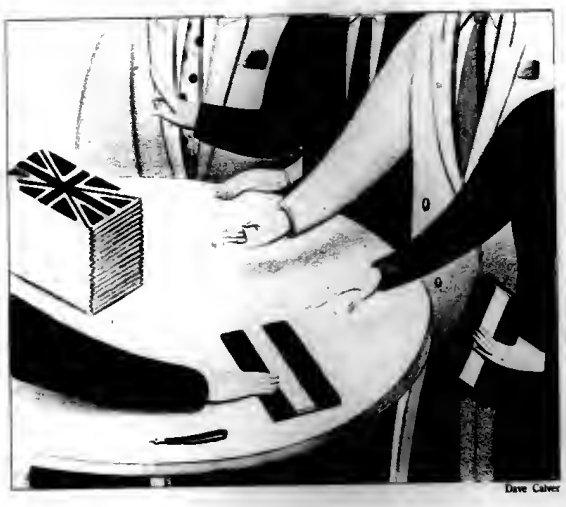
"In the States," Horwitch says, "there is the danger of underestimating what is going on elsewhere."

It would be a mistake to underestimate the extent of progress and innovation going on in Europe, he says, because for U.S. companies, Europe offers "a new geographic platform for doing some things differently, and maybe even better, than they've been done before." — *Compiled and written by Joanne Kelleher*

Staying In Touch

Events in Europe are progressing faster and in greater numbers as the clock rolls toward 1992. In order to make it easier to stay on top of the situation, we are providing contact information for key groups:

- **The European Strategic Program for Research and Development in Information Technology (Esprit)** has launched more than 650 projects since its formation in 1984. For further information about work in progress, contact the Esprit Information Desk, Commission of the European Communities, telephone (011-32) 2-235-1603; fax (011-32) 2-235-3821.
- **The German National Research Center for Computer Science (GMD)** maintains offices in Washington, D.C., and Berkeley, Calif., to assist in U.S./German scientific cooperation. GMD initiated the foundation of the International Computer Science Institute in Berkeley. Its research is particularly strong in the fields of software engineering, parallel computing, communications systems and expert systems. To contact the Washington, D.C., office, call (202) 466-2808.
- **The European Research Consortium for Informatics and Mathematics (ERCIM)** is a research consortium formed in April 1988. Its members are Germany's GMD (see contact information above); the Netherlands' Centrum voor Wiskunde en Informatica, telephone (011-31) 20-592-4092; France's Institut National de Recherche en Informatiqu et en Automatique, telephone (011-33) 13-963-5511; and the UK's Rutherford Appleton Laboratory, telephone (011-44) 23-544-5894.
- **Office for the Official Publications of the European Community** is reachable via European Community Information Services, telephone (202) 862-9500.



Dave Calver

Who Gets CONTROL?

Changes in Europe make organization of IS a moving target

When the world is your market and you have data centers peppered across the European countryside, to say nothing of even more far-flung spots, what kinds of problems could you have? Aside from jet lag, all you really have to wrestle with are systems incompatibilities, cultural and procedural inconsistencies and the occasional local staff insurrection.

Actually, figuring out how to structure an information systems operation in Europe has never been particularly easy, and now it's getting harder, with almost all companies feeling some pressure to get country operations marching to a tune that everyone can follow.

A few companies, looking at the way the international market is starting to heat up, are thinking in even grander terms, such as borrowing a leaf from the European Community and erasing all boundaries to create an IS structure that has more to do with functional requirements than geography.

That's the next big issue, says Adam Crescenzi, executive vice president and managing director at CSC Index, Inc. in Europe — "how to move away from the country-by-country focus and create multicountry organizations supported by systems in key locations."

The way Crescenzi and Kirtland Mead, a vice president working with Crescenzi out of the London office, sketch it, this organizational model sounds like a Houdini trick. What it's about, they say, is creating the illusion of national operations with an international control structure.

What do you do, for example, if you have a German operation with no IS support? You provide IS support for it, but not necessarily out of Germany. Put the IS support wherever it makes sense in terms of cost or the ability to attract good people.

Some companies are starting to move in this direction. Mead mentions Monsanto Corp.'s multicountry invoicing center in Brussels. And David Eggleton, UK director of the Butler Cox Foundation, says he's also noticed the beginnings of a trend, at

least among multinational corporations. He sees them distributing functions, including systems projects, across several countries.

"You get the units with the best skills to develop systems for each other," he says. "The Germans build the financial systems; the French build the retail [systems] and so on."

Few people would argue that this organizational model makes sense for the future, but right now, most companies are having a hard enough time trying to figure out how to keep existing country operations moving in the same direction.

Martin Cutler, divisional director of information services at UK retailer WH Smith Ltd., has grappled with this question in connection with his company's acquisitions in the U.S. — a line of airport and hotel gift shops and a Philadelphia chain of record stores.

At first, Cutler says, he tried to deal with these remote operations by dedicating information technology account managers within the centralized IS department to deal with those units. "But at the end of the day, you're still two different organizational entities," he says. Now, IS operations for the two U.S.-based businesses are run out of a single department in Philadelphia, and the U.S. staff is allowed a controlled measure of self-determination.

Marcello Pagnucci

Cutler chose ***controlled decentralization***

Cutler says this kind of decentralization, which he is also pursuing within the UK, seems to work much better, although it's not easy to find the right balance between freedom and control or between the roles of "guide" and "policeman."

Schindler Holding Ltd. in Hergiswil, Switzerland, has been trying to manage the same kind of balancing act since it acquired Westinghouse Electric Corp.'s elevator company in January 1989. When Schindler bought the elevator operation, it also picked up an IS department and a manager of computers and communications — Edward Hodgson, who is a man with a mission.

A major user advocate for Integrated Services Digital Network (ISDN) services in the U.S., Hodgson has made a strong push for setting up ISDN links between Schindler Elevator Co. in the U.S. and various Schindler sites in Europe. Back in Switzerland, however, the company's IS subsidiary, Schindler Informatik AG, while conceding the value of ISDN's high-speed, switched overseas connections, is less certain the technology is needed throughout the firm.

"The U.S. is much more technically driven than we are," says Schindler Informatik IS manager Peter Eschenmoser. "People like Ed are always talking fancy tech, possibly because they have earlier, better

Toy Maker Gives Unification Another Try

The approach of the 1992 open market has motivated Mattel, Inc., the Hawthorne, Calif.-based toy company, to make a second attempt at implementing a common marketing, distribution and inventory control system across Europe.

Consolidation of the company's current country-centered distribution arrangement is a strategic priority, says Michel Bernard, director of worldwide marketing systems. Moving to one or a few product warehouses would enable the company to keep stock levels low and respond more quickly to fluctuating market demands in individual countries. This plan will work only if all European sites use approximately the same software for inventory control and distribution, and Mattel has already discovered how difficult it can be to obtain that agreement.

About six years ago, Mattel tried and failed to get its European sites to adopt a U.S.-developed marketing and inventory system called Mimics. "There were so many specificities in the market; business practices were not the same," Bernard says.

The strongest resistance came from Mattel's German subsidiary, Mattel Toys GmbH, where the pilot just did not deliver the kind of reporting that German managers expect, says Wolfgang Weber, manager of MIS. Rather than rejecting the system outright, Weber's group enhanced Mimics, consolidating records across various databases to eliminate redundancies and changing the marketing and customer reports. The resulting system was renamed MINDS, for Mattel Integrated New Distribution System.

In fact, headquarters took the corrective action well. Not only did central IS approve the changes, Bernard says, but it has almost determined that MINDS, which already serves three other countries, should be the basis for Mattel's Pan-European marketing, inventory and distribution control system.

Of course, Bernard notes, some modifications will be needed in order for this to happen, because the system will have to accommodate less expert users as well as additional currencies and country procedures, but those are already in process.

— Elisabeth Horwitt

supported and documented technology." Hodgson, for his part, claims that Europeans "have no urgency about getting things done. The Swiss and the Germans are technically expert, but they stand around and kick things."

Hyatt Hotels Corp. has managed to avoid such conflict by dividing itself into pieces. While the friendly service at the front desks at the Hyatt International hotel in London and the Hyatt in Chicago may be identical, the IS departments supporting the two are quite distinct.

"The international division of Hyatt is totally separate, with separate vice presidents and presidents, and it's the same with information systems," says Alex Lee, director of electronic data processing at Hyatt International, a sister company of Hyatt Hotels.

Even though his 15-person IS team, which oversees Hyatt's 54 overseas properties, is based in Chicago, Lee says, the international IS operation is much more egalitarian than the domestic one. This group cannot make unilateral decisions for the field, according to Lee. Standards are set in Chicago, but area and divisional offices and one or two data processing managers in each hotel have decision-making authority within those guidelines.

The standards used internationally are not the same as those used by the U.S. arm of Hyatt. For example, while the domestic operation has moved strongly toward Unix, switching its central reservations system from an IBM 4381 mainframe and proprietary software to AT&T Unix processors and a relational database from Informix Corp., the international operation uses the Pick operating system.

Even their network schemes are different. A year ago, Hyatt's U.S. operation moved from IBM Systems Network Architecture to Transmission Control Protocol/Internet Protocol, while the international operations continue to use X.25 packet networking. Both groups, however, share the Unix-based central reservations system in Oakbrook, Ill., connecting to it over a mixture of X.25, private-line and dial-up facilities.

Despite all of these differences, Lee says he believes the relationship between the two IS groups works well. "We consider what Hyatt domestic does, and we keep an open mind," he says.

Many companies have found a solution somewhere in the middle. Benetton S.p.A., an Italian clothing manufacturer, solicits from its units in 75 countries input about issues such as hardware investments but sets strategy and develops 90% of the applications at its central headquarters.

Local data processing managers are hired by the local units, although IS director Bruno Zuccaro has influence over this hiring process, he says. Certainly, he has a hand in shaping those hired. Managers are brought to Italy and "instructed in the rules and logic of the company," he says.

The ISDN debate aside, Schindler is making progress toward operational uniformity. Central IS has laid out a five-year direction, called Computer Integrated Enterprise, that defines the company's hardware platform, software platform, key applications projects and the way it manages IS. So far, this has allowed the company to achieve one key goal — compatibility of corporate data financial reporting. Production planning and control is handled autonomously by each division because customer needs in different countries differ so widely, Eschenmoser says. Furthermore, "You can't get compatibility of all business procedures" across different countries, he adds. — *Compiled and written by Joanne Kelleher and Elisabeth Horwitt.*

Managing European Operations From The States

Global commodities trader Transammonia, Inc. has decided to ignore conventional wisdom, which says you need a local presence to manage information systems in Europe.

"There is no formal local support, no IS" to keep these systems up and running, says James C. Shroads, director of MIS at the New York-based firm. Instead, the company depends on vendors and "a couple of good users" at each site for support and maintenance.

European sites are equipped with personal computer-based local-area networks and communications gateways, which link traders with their colleagues around the world as well as to the corporate data center in Tampa, Fla. Applications development is handled in the U.S.

This strategy is workable, in part because Transammonia's overseas operations are small and standardized. The largest sites have 35 to 40 staff members and "look the same from an operations standpoint," Shroads says.

Reinhold Spengler

Transammonia's Shroads and Rapsilk *spend several weeks per year working at overseas sites*

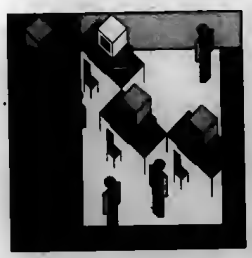
While keeping systems management on this side of the Atlantic has saved Transammonia the headaches and expense of maintaining overseas IS centers, it has also required some accommodations. IS staff members must all be prepared to answer calls from European users at home and at any hour. And in order to ensure reliable support for its overseas sites, the company has limited itself to one network service vendor, British Telecommunications PLC, and one systems vendor, Digital Equipment Corp.

Perhaps the biggest challenge, however, is making overseas personnel feel like participants in systems decisions. If you "appear to leave them no option or input," users will respond with passive resistance, says Christopher Rapsilk, manager of corporate systems. "They'll find some reason not to use the system."

— Elisabeth Horwitt

Europeans say: 'WALK, DON'T RUN'

PCs Multiply But Seldom Do The Big Jobs



Europeans have been buying personal computers with abandon in recent years, but there is considerable growth potential left, according to local market research firms.

For example, Inteco Corp., a market research and consulting firm in Surrey, England, is forecasting that mainframes, which now represent 22% of equipment shipments in Western Europe, will drop back to 18% by 1995. The company expects that midrange systems, currently the top-selling equipment category, will hold steady at 46% of the total market, suggesting that much of the surge in PCs and Unix workstations, which it sees as the real comers, will be at the expense of mainframe vendors.

Despite their hot sales profile, PCs still tend to be used mostly in stand-alone mode across Europe and mostly by lower level personnel. According to Inteco, only 25% of managers in Western Europe have a PC or workstation on their desks, as opposed to more than 50% in the U.S.

Mainframes and minicomputers continue to be the center of information systems and are used to run applications critical to business, according to several European and American information systems managers. In most parts of Europe, companies are more cautious about setting up local-area networks to handle critical applications.

Swissair AG is starting to interconnect workstations, IBM Application System/400s and IBM Personal System/2s for a distributed financial applications project but plans to take things slowly, says Waldo Hasler, general manager of computer centers.

"We're doing distributed processing slowly, if it

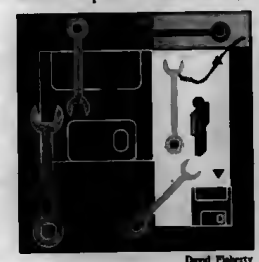
Continued on page 12

Packaged Software Gains Acceptance

Homegrown and custom-developed software is still the rule inside European companies, and some degree of bias against applications "not invented here" persists in most countries, according to users and analysts familiar with the region. But this tradition is changing, largely because of the need for speedier deployment of systems in the increasingly competitive and volatile European marketplace.

European companies are moving toward ready-made applications, and, according to UK research and consulting firm Inteco Corp., the emerging appetite for applications is decidedly international, with sales for general-purpose applications dominated by companies such as Microsoft Corp., Lotus Development Corp., Borland International, Inc., Oracle Corp., Informix Corp., Computer Associates International, Inc. and Dun and Bradstreet Software. IBM and Digital Equipment Corp., which claim lions' shares of mainframe and midrange equipment sales, are also strong suppliers of software.

There are also some Europe-based international players with considerable sales across Europe. Software AG is one. Another is SAP AG of Walkdorf, Germany, which has long been the premier vendor of integrated, multilingual software for multinational manufacturers with IBM mainframes. In addition, Inteco says, many small software vendors provide vertical and niche applications for local country markets.



David Flaherty

Interest in computer-aided software engineering (CASE) tools is also on the upswing, although actual implementation is progressing slowly.

Estimates vary as to the actual

Continued on page 12

PCs MULTIPLY

Continued from page 11

makes sense, not for its own sake," Hasler says. "You always hear about cheap MIPS [with distributed PCs], but if you put it all together and add skills and administration, it is not so cheap."

This attitude of caution is pervasive. In fact, even in countries where LANs are common, the systems are primarily used to run routine office automation applications and for sharing peripherals.

Tom Koehler, a consultant at Andersen Consulting in Germany, estimates that 75% of the top 3,000 German companies have set up PC LANs, although not necessarily at all sites. "But they still use the mainframes for critical applications," Koehler explained.

One factor inhibiting the widespread adoption of networked PCs for substantive applications may be that providers of technology — LAN software and PCs — often view Europe as second in importance to the U.S. market, says Al Hyland, director of worldwide systems at Polaroid Corp. in Cambridge, Mass. "They don't introduce the technology there until they have penetrated the U.S.," he says, and even when vendors do get around to Europe, they sometimes "don't seem to have the same level of technical support lined up as they do in the U.S."

Part of the reluctance to set up LANs also stems from a shortage of talent to administer and maintain them.

"PC LANs have been on my wish list for two years, but there is no personnel to do it," says Wolfgang Weber, manager of MIS at Mattel Toys' German subsidiary, Mattel Toys GmbH, adding that he hopes to get management approval and sufficient staff resources for a LAN to connect 20 stand-alone PS/2s by year's end.

Fear loss of control

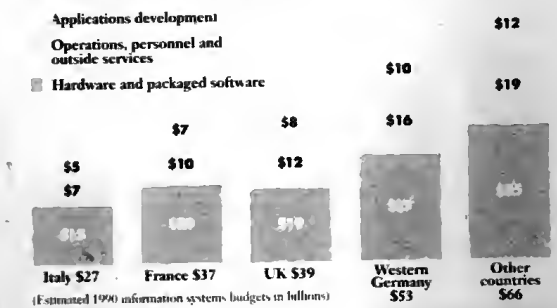
Frequently, however, the real holdup for LAN-based systems is IS reluctance.

Thomas Starkloff, director of Nolan, Norton Institute in Paris, says that in France, where downsizing is just starting to occur, IS managers are expressing many of the same concerns about loss of direct control that their American counterparts have long voiced.

And in Germany, Mario Pimentel, an analyst at Nolan, Norton Institute in Frankfurt, says that often business users are willing to move to LANs, but information technology managers aren't anxious to support LAN-based computing. This resistance from systems managers is starting to produce a situation in which users are buying and setting up their own LANs, he says. — Michael Alexander

Spending profiles

Investments in packaged software vs. applications development differ considerably across Western Europe. Italians spend the most on packages, relative to in-house development ($3 billion). The gap is much wider in the UK and Western Germany



(Estimated 1990 information systems budgets in billions)

Source: Ledgeway/Datapro

PACKAGED SOFTWARE

Continued from page 11

level of current CASE usage. Rob Baldock, partner in charge of the business development management group at Andersen Consulting's London office, puts the figure at somewhere between 30% and 40% of all companies, while Russell Jones, the late editor of *The Software Development Monitor*, a CASE journal in the UK, saw the incidence as much lower. "The great unwashed — 80% to 90% — are doing absolutely nothing," he said in an interview shortly before his death.

If things seem to be moving slowly, the reasons may have more to do with general philosophy and style than any particular misgivings about the technology. Many Europeans observe that European companies are not generally as fast off the mark as their U.S. counterparts in making new technology investments. Furthermore, many European companies have long preferred working with contract programming houses to handling their own systems development.

A mix of vendors

The CASE tools that are in use today come from a mixture of U.S. and domestic vendors, with a slight bias in individual countries toward well-established local products.

One key difference between CASE in Europe and CASE in the U.S. is the preferred platform. According to Andrew Milner, director of a membership research program on systems development at UK consultancy Butler Cox, most CASE development work in Europe is done on the mainframe.

Internal software development and the use of CASE tools may surge as a result of some efforts under way to develop a Pan-European systems development style. Two major initiatives are at work for Pan-European CASE and Common Application Environment.

The first is the European Community-sponsored "Euromethod," which is seeking to combine CASE methodologies developed by the French and UK governments.

Meanwhile, a commercial initiative is under way as part of the Eureka Software Factory (ESF). ESF, which claims some 14 companies and institutes among its members, is investigating a range of advanced technologies, including CASE.

The organization, which is headquartered in Berlin, is working with a $400 million budget to produce a software development environment capable of transcending platform language and procedural differences.

Commercial case tools are expected by 1994. Last year, ESF demonstrated its first prototypes. — Ellis Booker

Kenneth Chan

Benetton's Zuccaro: *"We can't wait months to connect our new companies — we want our operations to be set up in one month"*

Crossing Europe *with* VAN TRANSPORT

Ask almost any information systems manager to name the biggest obstacle to a truly open European market and the answer will be immediate: the closed state of European telecommunications.

Things aren't as bad as they once were. For example, it is now often possible to use the same type of telecommunications equipment in several countries. And, in some places, it is no longer necessary to go through the Postal Telephone and Telegraph authorities (PTT) when ordering data links out of the country. But the fact remains that there's a lot of work still to be done.

Many companies are turning to value-added networks rather than dealing with multiple PTTs

Not surprisingly, multinational corporations — many of them U.S.-based — are applying the greatest pressure for change. What these users want, according to George McKendrick, executive director of the International Telecommunications Users Group (Intug), is primarily good-quality private circuits, bandwidth on demand and the ability to connect their choice of equipment to the public network. But another common complaint is that the speed and quality of circuits and services varies enormously.

European PTTs' international T1 rates differ widely (see chart page 15). And the European telecommunications users group, Eurolug, recently concluded that various PTTs levy "arbitrary" tariffs on their X.25 packet-switched network services. Furthermore, trans-European networking standards are still the stuff of dreams.

For instance, X.25 public networks, which supposedly employ the same standard protocol, do not interoperate well, according to Intug's McKendrick.

Rather than have to deal with a gaggle of individual PTTs, a growing number of multinationals have been turning to international value-added network (VAN) providers.

The Italian apparel company, Benetton S.p.A., for example, decided six years ago to replace a collection of lines leased from various PTTs with General Electric Information Services' (GEIS) VAN service. For a 75-country communications system that runs critical applications such as sales support, cash clearing and product distribution control, "We needed worldwide support

and quick response," says Bruno Zuccaro, Benetton's director of IS. "We can't wait months to connect our new companies."

Transammonia, Inc., a New York-based commodities trader, chose BT Tymnet, Inc. to both operate and manage its global network, according to James Shroads, the New York-based international commodities trader's director of IS. "You want a single-source and a single point of contact," rather than a collection of PTT X.25 services roughly glued together, Shroads says. At a previous job, Shroads had to manage such a disparate network, "and it was no fun."

Although direct dealings with PTTs can still be difficult, progress is being made on a number of fronts. The EC and other regulatory bodies have produced a steady stream of initiatives during the last couple of years aimed at improving the state of European networking (see story below). Installation of fiber-optic cable, which offers much greater reliability and capacity than copper-based wiring, has shifted into high gear across the continent. Even the ferociously independent PTTs are starting to come around.

Not all PTTs are coming around at the same pace, but most are signaling some recognition of the need for change (see story page 15).

Playing the circuits

Monthly rental charges (in U.S. dollars) for 64K bit/sec. and 2M bit/sec. circuits to the U.S. vary widely from country to country, but Italy is the costliest point of origin

Belgium	$4,041	$49,087
France	$4,373	$52,618
Germany	$6,198	$58,576
Italy	$9,252	$92,518
Netherlands	$4,505	$49,451
Switzerland	$4,452	$51,189
UK (BT*)	$4,440	$54,766
UK (MCL*)	$3,863	$47,714

(Based on the most commonly used trans-Atlantic cable connection TAT-8)

*BT is British Telecommunications PLC
MCL is Mercury Communications Ltd.

Source: Tarifica Service/Logica UK

One of the most significant changes has been a new willingness to consider alliances that could make life easier for companies requiring multicountry networks. Last May, for example, AT&T, British Telecom PLC, France Telecom and Kokusai Denshin Denwa, the Japanese carrier, announced an alliance that allows users to order transglobal equipment and services from any one of the four.

Actually, the first instance of PTT collaboration was engineered by General Electric Co. two years ago, when the company hired BT, France Telecom and AT&T to jointly build and operate its international network. According to Stanley Welland, GE's manager of corporate telecommunications, the resulting network transformed a hodgepodge of European links into a coordinated private T1 network spanning 25 countries and linked to the U.S. via trans-Atlantic cable lines terminating in France and the UK.

Ultimately, the real key to transparent and dependable pan-European communications will be Integrated Services Digital Network (ISDN), a standard for exchanging voice, data and image over both packet- and circuit-switched lines. That however, is still a distant ideal in most places.

Although all of the major European PTTs have committed to ISDN, only France and the UK have anything approaching widespread ISDN domestic services. Each country still has its own flavor of ISDN, with no guarantee of interoperability. — ***Compiled and written by Elisabeth Horwitt.***

SOME RAYS OF HOPE

Although Europe remains a jumble of regulations, tariff structures and incompatible technologies, there is hope that some of these tangles will be sorted out as a result of initiatives from a variety of sources. What follows is a rundown of some of the most pressing concerns for businesses operating in and across Europe and recent activities that attempt to address them.

Problem: Individual country requirements for certification of telecommunications equipment.

Response: A European Community (EC) directive adopted by the Council of Ministers last July does away with country-by-country conformance testing of telecommunications terminal equipment. When a full set of standards is defined, which has not happened yet, equipment that meets the EC-defined standards will be stamped to certify that it is acceptable for connection to public networks in all EC member countries.

Problem: Variations in tariff structures.

Response: The Organization for Economic Cooperation Development, the International Chamber of Commerce and others are looking at the issue of telecommunications tariffs. In general, what these groups are advocating is a cost-based pricing scheme and a common formula across PTTs for calculating the prices of various network services.

Problem: Cost structures that impede free competition by value-added network services.

Response: A June 1990 EC directive stipulates that value-added network services must be opened to competition. The directive seeks to ensure that PTTs provide the basic lines to value-added networks at about the same cost and level of access that they provide to their own services.

Problem: Lack of pan-European Integrated Services Digital Network (ISDN).

Response: The European Telecommunications Standards Institute (ETSI), one of several EC-sponsored standards-setting bodies, has hammered out several specifications, test principles and attachment requirements for ISDN, which have been adopted as standards.

Calling something a European Telecommunications Standard does not actually make it so, however. ETSI-proclaimed standards must still pass through the EC Parliament and Council of Ministers and then go on to member states for "implementing legislation."

—Ellis Booker

PTTs Cling To Home Court Advantage

Will the rest of Western Europe follow Great Britain's lead and establish free markets in telecommunications? Don't hold your breath.

Most of the Postal Telephone and Telegraph authorities (PTT) have no objection at all to competition, as long as it's not on their turf.

France, for example, plans to sell packet switching services in the UK through its subsidiary Transpac. France recently passed laws to make it easier for value-added network (VAN) vendors to provide services linking the country to the rest of the world. Recently, however, the minister of posts, telecommunications and space reiterated that the government sees no call to end France Telecom's monopoly of regular phone lines.

France, it should be noted, is at the more liberal and progressive end of the scale. Germany reportedly lags behind most of the major industrial countries when it comes to telecom liberalization. Deutsche Bundespost, levies some of the highest international leased-line rates in Europe. While VAN vendors were recently allowed to offer services directly to German customers, competition is still kept under tight control. The situation in Switzerland is even worse. Local leased-line rates are high, and users must order all of their telecommunications equipment and network services through the PTT.

The good news is that even the more recalcitrant PTTs are reportedly eager to improve their records. In Spain, which like Italy is the target of many complaints about line quality and service delays, Telefonica installed 1.6 million lines last year and is promising to deploy switched 56K and 64K bit/sec. and Integrated Services Digital Network (ISDN) services by year's end. And at Deutsche Bundespost, rate cuts and major network upgrades, including ISDN implementations, are reportedly in the cards and only being held up by the PTT's obligation to upgrade eastern Germany's telecom infrastructure.

The PTTs are also showing new willingness to bargain. For example, a group of Fortune 500 companies are working with Belgium's PTT on a plan for volume discounting.

— Elisabeth Horwitt

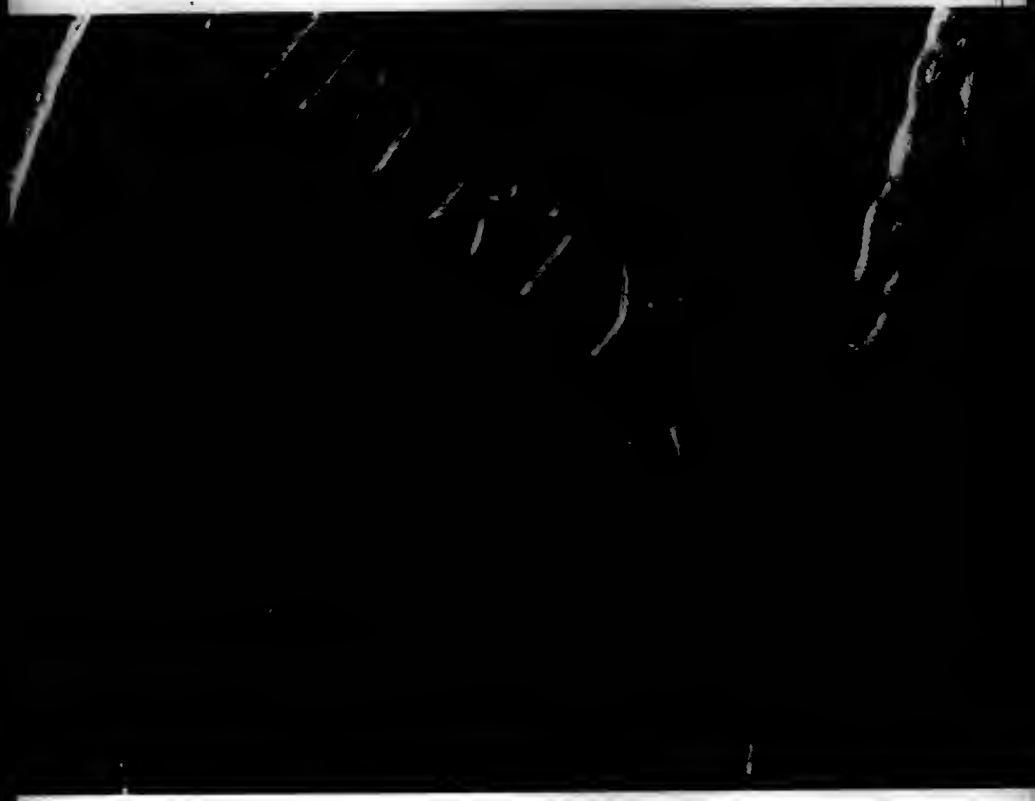
The state of European connections

The PTTs — Europe's telecom authorities — current services and planned changes

PTT name, country	What year does the PTT say it will offer ISDN throughout its country?	What is current or planned availability of digital services as a percentage of local and trunk lines?	How has the PTT moved to lower its tariffs for private T1/E1 lines?
Generaldirektion der Schweizer PTT, *Switzerland*	End of 1992	85% of trunk by 1992	No change nationally. Reduced by 32% per month to U.S. on March 1, 1991. Similar reductions effected for other overseas destinations.
France Telecom, Inc., *France*	Available now	100% of local completed now, 95% of trunk by 1995	No change nationally. Reduced by approximately 10% to U.S. on July 1, 1990. Circuit costs to UK and Ireland also reduced by 12% per month.
British Telecom PLC, *Britain*	End of 1992	45% of local and 100% of trunk completed now	Increased nationally. No recent change in circuit costs to U.S., but circuit charges to European destinations, Australia and Singapore have been reduced.
Mercury Communications Ltd., *Britain*	End of 1991	100% digital now	Increased nationally. Circuit costs to U.S. reduced on April 2, 1991.
RTT, *Belgium*	Available now	39% of local and 51% of trunk available now	Decreased nationally on March 1, 1990. Reduced on May 1, 1991, 4% for 2M- and 20% for 1.5M bit/sec. to U.S. Similar reduction effected for European destinations.
DBP Telekom, Inc., *Germany*	1993 for Western Germany, 1997 for entire country	95% of local and 70%-80% of trunk available now	No change nationally at present. Reduced international costs by 30% in September 1989. Reduced costs for analog circuits to U.S. by 25%.
Telefonica, *Spain*	End of 1992	20% of local and 50% of trunk available now, 75% of trunk by 1992	Increased nationally. No recent international change. Proposed reductions are currently awaiting government approval.
SIP and ASST (national), Italcable (international), *Italy*	End of 1992/1993	50% of local and 75% of trunk available now	Increased nationally. Reduced approximately 18% to all international destinations on Jan. 16, 1991.

Source: Tariffica Service/Logica UK

The cost crunch.



Budgets get cut. Demands

Tradition has it that if you want something done for less, you do it yourself. So once again, the computer world defies tradition.

IS departments are discovering that many "in-house" functions can be handled more economically, and better, by outside specialists. Which is why, as belts tighten, outsourcing has become a hot topic.

It's also why IBM has dramatically expanded our range of services, to provide whatever kinds of support you need, to save you the most money.

For example, we can run your whole

don't. If you need help, we have it.

data center (as we're now doing for several large customers) or we can take responsibility for selected areas.

From disaster recovery, to network management, to application development and engineering, to training your people and helping end users, to installing fiber optics, to multivendor integration and maintenance, to name a few.

If you like, we can begin by analyzing your operation to see where, or if, we can help you. If you don't need us, we'll say so. But if we can save you money, we'll show you how, up front. We'll also put you in touch with similar customers so you can share their experience.

The idea is for IBM to lighten your IS burden, to free your resources so you can focus on your core business. After all, our core business *is* IS. We're already geared for just about any problem you're likely to face. So our economies of scale can mean economy for you, too.

To learn more about how IBM services can help you meet both your needs and your budget, call us at 1 800 IBM-6676, ext. 881.

IBM

Ou Sont LES TECHIES?

Marcello Pagnetti

Diriberry: *Companies often use contracts for temporary labor as a means of finding recruits*

Hiring the right person for any job can be tricky, but in some European countries, information systems managers are finding it impossible to hire anyone at all.

"The demand in France is high for [IS] professionals," says Alain Diriberry, senior manager of information technology at National Westminster Bank SA in Paris. "We're lacking 20% of the workers needed to fill jobs."

"The market in Germany is empty," says Uwe Renald Mueller at Robert Bosch GmbH, a maker of automotive equipment. "It's very hard to get experienced specialists. The growth rate of [information technology] usage within the industry has been very high for the last 10 years, and universities cannot educate enough people."

The problem is not so much an absolute shortage of data processing professionals, but rather, a high demand for a limited number of people with particular skills, says Richard Wonder, national director of the IS division at Menlo Park, Calif.-based Robert Half International, Inc. "Often, there are local people available, but like the U.S., the people with the most high-tech skills, such as Application System/400 or Unix, are more in demand."

Once they find people to hire, employers usually don't have too hard a time keeping them. Europeans do not tend to be job hoppers. Turnover is lower in most European countries than in the U.S.

People who have older DP skills such as Cobol are in large supply, he says, but companies aren't anxious to hire them.

The economic unification of Europe has put a particular premium on some specialties, Wonder observes. "People who have EDI and connectivity skills are in short supply and high demand. Manufacturers as a whole are upgrading to CAD/CAM and CIM systems, so those people are in demand. Retailers are developing regional centers, so communications experts who know retailing are in demand."

Shortages like these are driving up salaries in many places. In England, for example, the average data processing salary has increased by 12% to 13% per year in recent years, Wonder says.

Some companies are turning to outside services as one way to get the technical help they require (see story next page). This actually is not a new idea for European companies, says Tom Moore, president of the European division of Montreal-based consulting firm DMR Group, Inc. Contract programming firms have long been a very big business in Europe. And, Moore adds, a lot of European companies prefer working with "body shops" for a variety of reasons, including the length of time it can take to make a hire even after you have found a good prospect — "often three months, sometimes six" — and the "extremely high social and benefit

costs" for employees in many countries.

Finding talent is also not a simple question of matching skill requirements with skill supplies.

Language can also be an important factor, particularly for companies with operations in a number of countries. While it is true that English is the language of business in Europe, most day-to-day communications are conducted in the local language, Moore says. And that means it is very difficult to operate in Europe unless you speak at least two languages.

Mobility or, more precisely, the lack of it can also be a difficult issue, especially if a company wants to use staff rotation to replicate skills in several countries or to create a multinational staff for an IS facility that supports business functions in a number of countries. Legal restrictions on hiring foreigners over domestic workers still exist, even though the European Community has plans to open up that situation. For the most part, however, it is not law but culture that represents the real barrier.

"The law says you have to prove you can't get someone with the right skills in the country," says Francois Charrier, a consultant at Andersen Consulting in Switzerland. "But," he adds, "that is not too tough to prove with EDP" because of the shortage of technical talent there.

Willingness to relocate varies from place to place and person to person, but it certainly can't be assumed.

"We have tried to bring people from other countries, but it is not easy," Mueller says. "The European mentality is to stay local. If you go more than a few hundred miles, there is a difference in thinking, behavior, language. So people do not move as easily or quickly as they do in the States."

> ***"We have tried to bring people from other countries, but it is not easy. The European mentality is to stay local."***
>
> **Uwe Renald Mueller**

On the plus side, once they find people to hire, employers usually don't have too hard a time keeping them. By and large, Europeans do not tend to be job hoppers. Turnover is lower in most European countries than it is in the U.S., several IS managers say.

One reason for low turnover may be that workers in most parts of Europe are a lot more protected than workers in the U.S. "In Europe, it is hard to fire someone," observes Michel Bernard, director of worldwide marketing systems at Mattel GmbH, a subsidiary of Mattel, Inc. "The laws are very protective." And laws in many places don't just govern terminations — they also cover quality of work life.

"In France, you can't push people as hard as they do in the typical U.S. [IS] sweatshop," says Thomas Starkloff, director of Nolan Norton Institute in Paris. There are several laws that limit when and how much employees are required to work, he points out, as well as how much companies must spend on education.

In fact, one drawback to low turnover is that long-term employees may not keep abreast of technical changes, which can be a problem for some firms. To help cope, European companies routinely invest heavily in training. *— Compiled and written by Michael Alexander and Joanne Kelleher*

Outsourcing Seed Planted, Ready To Grow In Europe

If you can't find enough locals to staff a European operation, or if you just need some help getting by while you figure out how to assemble a team, don't worry. There's plenty of help available on a contract basis, and a lot of it even has an American twang. U.S. service providers are setting up beachheads all over Europe. Familiar names such as Electronic Data Systems Corp., CSC, Inc. and Andersen Consulting are cropping up alongside established European service providers such as Sema Group and Cap Gemini Sogeti.

So far, outsourcing — or facilities management as it is more commonly known in Europe — has not made as big a splash as it has in the U.S. Most of the European players still derive the bulk of their revenue from contract programming, which is much more heavily used in Europe as a whole than in the U.S.

Many observers feel, however, that increasing demand for sophisticated systems and complex networks, when combined with talent shortages, will make the idea of outsourcing more attractive for both European companies and foreigners operating in Europe.

Cap Gemini Sogeti certainly believes that. It launched a Pan-European facilities management group in May, shortly after it cinched a deal to handle computing and networking for the UK arm of H. J. Heinz Co. through its recently acquired Hoskyns facilities management operation.

In the meantime, both European and U.S. computer vendors are crowding into the field.

German automotive equipment maker Robert Bosch GmbH handed part of a major data center near Stuttgart, Germany, over to Digital Equipment Corp. to run. Bosch had several reasons for partnering with DEC to run its data center operations, according to Uwe Renald Mueller, who heads up data processing at the center. Operational costs were increasing rapidly, he says, and the data center had been growing by about 100% per year for the past four to five years. If that weren't enough, he adds, "We have a more complex work flow and very expensive [information technology] specialists, and it is very hard to get experienced specialists — for VMS or anything."

— Michael Alexander and Joanne Kelleher

SYSTEMS *without* BORDERS

Centuries of proximity with often incompatible neighbors have taught Europeans patience and the fine art of compromise. These are lessons that many firms operating in Europe are now finding they must apply to the intricate process of linking systems and software in a meaningful way across the whole span of their business.

Europe is commonly believed to be far ahead of the U.S. when it comes to standards implementation, but many local sources say perception is considerably exaggerated.

At this point, U.S. companies operating in European countries are actually pushing standards in Europe as hard as or harder than the Europeans are, according to Ken Meates, managing director of Team Focused Design Ltd., a Berkshire, UK-based open systems consultancy.

"There is a good deal of skepticism [in Europe] regarding open systems because of the slow process of developing the upper level standards" for the Open Systems Interconnect (OSI) model, Meates says.

One reason for this skepticism is the fact that many vendors are not moving toward full OSI support any faster in Europe than in the U.S. "We will have standards when IBM pushes them, but IBM only says SNA," says Gerhard Ohring, an information technology department manager at FAG Kugelfischer Georg Schafer KGAA.

Ohring adds that IBM recently tried to discourage the German manufacturer from connecting its IBM Systems Network Architecture (SNA) systems over an OSI-compliant packet-switching service offered by Infonet Services Corp., saying that such links are far less efficient than the traditional SNA leased-line connections.

Another potential barrier to OSI's spread in Europe is the widespread implementation of de facto standards (see story page 21).

However, such protocols may act as stopgaps until OSI matures. "All OSI standards that we can implement, we will use," says Uwe Mueller, a data processing manager at Robert Bosch GmbH.

Unix implementation is also proceeding slowly. Many users say they see Unix as the future operating platform but won't move to it just for the sake of moving.

There are exceptions, of course. For example, DHL Systems, Inc., the Brussels-based package express company, has made a large-scale commitment to Unix, primarily because of the scalability and portability of applications that it offers, says Gordon Monro, general manager of information technology. The size of DHL's offices, located in 185 countries, varies enormously, Monro explains. While some offices process just 20

Katherine Mahoney

Marcello Paganelli

DHL's Monro *says Unix was the best way to reconcile big and small offices*

shipments per day, others see 20,000.

Monro, whose region is comprised of 73 countries and 20 support organizations, is now in the process of migrating from an IBM System/36-based architecture to an open systems (Unix) one, using three platforms.

Such notable exceptions aside, however, standards are moving incrementally. Many European firms have precluded the need for a move to Unix and sidestepped the gap in networking standards — at least for intracompany communications — by imposing internal standards that limit hardware platforms and ensure uniformity of software and formats for applications such as sales and financial reporting and inventory control.

Credit Suisse, for example, "relies on application integration for all banking issues" to keep its various sites worldwide in touch, according to information systems manager Oscar Gemsch. "We have one database for all applications. On the hardware side, the Zurich-based firm has standardized on IBM in its home country of Switzerland but allows its New York, London and Luxembourg sites to use Digital Equipment Corp. systems. "As long as you have one architecture per destination, you can link via gateway," Gemsch says.

The trend toward more standardized business and database applications is extending to U.S.-based multinational companies with subsidiaries in Europe.

"Various countries are coming together under the European concept of trade, and if we want to play an important role in the future, we need to work on a European basis," says Hugo Gansemer, a business project manager at Information Systems International, a wholly owned unit of Mars, Inc.

In order to ensure a more Pan-European approach to doing business, Mars is centralizing applications development: 80% of applications are now initiated by central IS, whereas two years ago, 90% were developed locally.

Mars is also moving toward a three-platform common hardware strategy, Gansemer says, and the firm is "developing a database that will run across various systems" at various Mars sites in Europe, he adds.

Mars' European IS operation expects to start implementing OSI internally and electronic data interchange links with its partners within the next few years, Gansemer says. — *Compiled and written by Elisabeth Horwitt and Ellis Booker.*

Unstandardized Standards

European firms realized some time ago that they needed some standardized means of communicating with business partners. As a result, the continent is peppered with industry-specific — and in some cases, country-specific — "standards" that may prove a detriment to the widespread implementation of global standards such as OSI or even Europewide standards such as the electronic data interchange (EDI) standard, Edifact.

For example, most European banks have made a commitment to the SWIFT (Society for Worldwide Interbank Financial Telecommunications) protocol, while automobile companies and food producers often use country- and/or industry-specific versions of standard protocols for EDI.

In Europe, as in the U.S., OSI acceptance has suffered because a number of crucial higher level OSI protocols, such as the X.500 directory, have yet to be finalized. Rather than wait, industry groups have standardized on other widely used networking architectures such as Transmission Control Protocol/Internet Protocol (TCP/IP), IBM's SNA and Decnet.

"There is no question we have to go to OSI as a way to link our IBM and DEC systems," said Peter Eschenmoser, director of Schindler Informatik AG. "However, we now use TCP/IP and don't see a need to migrate to OSI for about five years."

— Elisabeth Horwitt

Enough for trade talk?

Electronic data interchange (EDI) is more idea than reality in most parts of Europe

	(Installed bases)	
EDI user	1990	1992*
UK	3,500	7,250
France	400	1,000
Germany	600	1,600
Italy	200	600
Spain	50	200

*Projected

Source: Gartner Group, Inc.

To compete in the '90s, you need...

open communications using TCP/IP, OSI, ISDN,

data transparency across IBM, Apple, DEC, HP

network management that's easy, reliable and ric

advanced applications like image, telephony and

an extensive growth path that protects your inves

a high-function server that makes cooperative pr

SNA, Ethernet and Novell®

and other platforms

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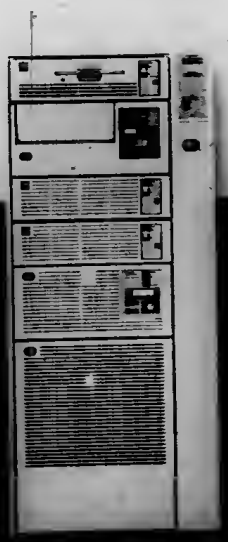


IBM

E U R O

Educational/Research centers: Imperial College in London is a major technical institute, and research activities at Cambridge University have drawn many companies into the surrounding area.

UK

Systems climate: Although most user organizations are still cautious about making the leap, the British government has been promoting open systems for about three years through its Department of Trade and Industry. Use of packaged software has increased substantially in recent years.

Worth noting: There are more headquarters organizations in the UK than in any other country.

Educational/Research centers: There are 14 universities in the country. Among MBA-granting schools, the Rotterdam School of Management at Eramus University is a standout. It offers an international MBA program with a concentration in business information systems. Three of the nine state universities are devoted to technology: Eindhoven, Delft and Twente.

The Netherlands

Systems climate: U.S. businesses located here report that the communications infrastructure is excellent. PTT Telecom, the Dutch phone company, is one of only a few national telephone companies in Europe offering 800-number service (called "green line"). The country was also recently named "European EDI Champion" by *Electronic Trader*, a European magazine that covers electronic data interchange (EDI).

Worth noting: The Netherlands currently houses 300 of the 2,000 European distribution centers operated by U.S. companies.

Educational/Research centers: Both Barcelona and Madrid have well-respected technical institutes. The Technology Institute of Madrid is a participant in a recently opened technology development center, designed to assist small and medium-size businesses with information systems use.

Spain

Systems climate: Spain has been importing large amounts of telecommunications and computer equipment from the U.S. and working aggressively to improve telecommunications services. IBM mid-range systems are reportedly very strong here.

Worth noting: Andersen Consulting is building a center for software development and facilities management in Madrid at a reported cost of $15.7 million.

Paid vacations

Even those European countries with the shortest paid breaks, top those the U.S. by more than a week

(1991 total holiday days)

Western Germany	40
Belgium	38.5
Austria	38
Spain	38
Finland	32
Norway	31
UK	31
Ireland	28

Source: European Industrial Relations Services

Cost of living

U.S. companies moving employees and families to Europe can expect to spend heavily almost everywhere, although the Low Countries and Germany are relative bargains

Location	Annual cost of living
Paris	$116,434
Madrid	$111,493
London	$107,621
Copenhagen	$105,928
Milan	$101,161
Frankfurt	$88,152
Brussels	$86,070
Amsterdam	$85,676

(Based on housing, transportation and goods and services for a family of four)

Source: Runzheimer Intl

Parlez-vous Français? Sprechen Sie Deutsch?

Residents of the Low Countries probably do. As a group, they speak more languages than any other Europeans

Country/Language	Number of languages 1	2	more
Netherlands	29%	32%	12%
Denmark	30%	25%	6%
Belgium (Wallonns)	22%	20%	11%
Belgium (Flemish)	23%	16%	6%
Western Germany	33%	6%	1%
France	26%	6%	1%
Spain	26%	5%	1%
UK	20%	5%	1%
Italy	19%	5%	1%

(Percentage of population able to speak a foreign language sufficient to follow a conversation)

Source: The European Community

F A C T S

Educational/Research centers: The Technical University of Munich is reportedly one of the leading European centers for parallel computing. The German National Research Center for Computer Science is an independent, nonprofit research organization that operates under the auspices of the German Federal Ministry for Research and Technology. Its headquarters are at Sankt Augustin, near Bonn.

Systems climate: In manufacturing, integration of plant-level computers and business mainframes is becoming a priority. Graphically oriented PC packages, such as Windows, are popular.

Worth noting: According to *Computerwoche*, an International Data Group German publication, a recent study of IS concluded that top management involvement with and use of information systems is extremely low.

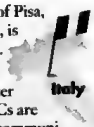
Computer density

Computers have not infiltrated Europe to the degree that they have the U.S.; even in the most computerized countries, machine-to-population ratios are only slightly more than half the U.S. average

(Computers in use per 1,000 people)

Source: *1991 Computer Industry Almanac*

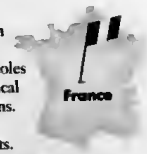
Educational/Research centers: The University of Pisa, which offers a master's degree in computer science, is involved in a research effort with Hewlett-Packard.



Systems climate: Hardware expenditures have been relatively flat, except for the personal computer category, according to International Data Corp. PCs are widely installed but reportedly underutilized. Telecommunications services in Italy are considered weak. There has been some discussion of privatizing the domestic telecommunications agency.

Worth noting: Although Italian IS managers have traditionally formed strong and lasting ties with computer manufacturers, observers say users are now exhibiting more independence.

Educational/Research centers: France boasts an excellent business school in INSEAD, located at Fontainebleau. The country's system of Grand Ecoles includes a number of excellent professional/technical institutes specializing in IS and telecommunications. Top breeding grounds for IS types are Ecole Polytechnique, Ecole Centrale and Ecole de Points.



Systems climate: IBM and Compagnie des Machines Bull together claim 86% of installed mainframes in France, according to Computer Intelligence. IBM and DEC each claim 31% of the minicomputer/workstation market.

Worth noting: The telecommunications infrastructure is generally regarded as very good, although some users complain that cost-tracking is difficult because of France Telecom's practice of lump-sum billing.

Busy hands, free hands

Unemployment highs and lows among major European countries

Country	Unemployment rate April '91	April '90
Spain	15.2%	15.7%
Italy	9.7%	9.8%
France	9.4%	9.0%
Belgium	8.5%	8.0%
UK	7.6%	5.7%
Western Germany	6.2%	7.4%
Netherlands	4.7%	5.2%
Sweden	2.1%	1.1%
Switzerland	1.1%	0.5%

Source: *The Economist*

Paying at the pump

Fuel prices all over Europe are high, but the five cities below are particularly hard on commuter pocketbooks

Location	Fuel price per gallon
Amsterdam	$3.94
Brussels	$3.56
Copenhagen	$3.90
Milan	$4.73
Paris	$4.24

Source: Runzheimer Intl.

CW Charts and Graphics: Marie Haines

HACKER'S *Paradise?*

Robert de Michiell

In a unified European community, what will be good for business may be even better for computer crime.

"Computer crimes may well increase as a consequence of the single European market," says Sanford Sherizen, security expert and president of Data Systems Security, Inc. in Natick, Mass. "Banks will more than likely be major targets, and the losses could be extremely high."

European unification alone will not increase the opportunities for computer crime, Sherizen says, but it may loosen some existing controls and restrictions as well as create new conditions for which controls and restrictions do not exist.

European computer security managers are already grappling with the same security problems as their North American counterparts. Personal computers and local-area networks are putting more data on desktops, where it cannot be easily protected. Data is also being put into the hands of end users, who are often not adequately schooled in security. Computer viruses are ptoliferating in all European countries, as they are in the U.S.

Unification will add to the security woes because the push for electronic data interchange and telecommunications standards — which are needed to link companies' operations across several countries — will also increase the number of entry points into computer systems and could help the spread of computer viruses.

Computer crime laws and the willingness of law enforcers to combat computer crime also vary widely now from one European country to another, which makes it difficult to prosecute computer crime offenders. Unification will help only if every country decides to adopt similar laws, and that is unlikely.

Denmark, Germany, Finland, France, Norway, Sweden, Switzerland and the UK have passed laws aimed specifically at curtailing unauthorized computer hacking, for example. However, Italy, Belgium, Spain, Portugal, Greece and the Netherlands have not. Some law enforcers fear that those countries without specific laws could become "hacker havens."

To help remedy the problem, the Council of Ministers, one of seven European Community (EC) institutions, has published guidelines that member states have been asked to consider when reviewing their computer crime legislation. The guidelines, which are based on a consensus of European security experts, include definitions of computer-related fraud, unauthorized access and other

computer abuses.

The European Commission, the executive organization of the EC, has also been actively looking into the feasibility of uniform computer crime laws. For example, the commission is proposing a single privacy law that would restrict the transborder flow of data (see story below).

European security managers, like their U.S. colleagues, say they worry that law enforcers are not up to the task of investigating computer crimes and prosecuting those who are caught in the act. "There is a lack of ability to investigate computer crimes by law enforcement agencies," says Andrea Gilardoni, a professor at Universita Commerciale Luigi Bocconi in Milan, Italy.

As in the U.S., the preponderance of crimes are committed by insiders, Gilardoni says. It is more difficult to protect computer systems from deliberate attacks by insiders, particularly if they are higher level managers.

Sergio Suni, coordinator for Guide, an international auditors association, complains that technology is often "glued like a stamp" on European companies, without regard for its security implications. Another problem, he says, is the lack of management concern. "That is the No. 1 security problem: no managerial culture" for security.

This is not, by any means, true of all European countries. Information systems managers in the UK actually allocate more of their IS budgets for training, software and other security-related expenditures than their counterparts in the U.S. do. Research by the UK consulting firm Butler Cox PLC shows that top banks and multinationals in the UK allocate 5% to 8% of their IS budgets to security. By comparison, recent estimates place the average for Fortune 1,000 companies in the U.S. at about 3%.

In addition, Butler Cox reports that corporations in the UK are starting to adopt the idea of appointing a corporate "software policeman." What this person does, according to Butler Cox security analyst David Cult, is "look at in-house-developed systems, as well as commercial packages like spreadsheets and word processors, to make sure they conform to a firm's overall security standards."

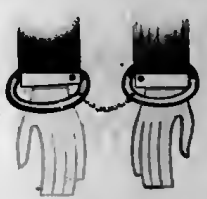
— Compiled and written by Michael Alexander

DATA TRANSFERS NOT TAKEN LIGHTLY

Privacy laws vary widely in Europe, and that worries some members of the European Community. The European Commission has been circulating a proposal that would regulate European databases and restrict the flow of personal data among many European countries and perhaps the U.S.

The so-called Privacy Directive, which was drawn up in September 1990 and is now being passed around for discussion, is intended both to make privacy laws uniform within the 12 nations of the EC and to restrict the flow of information to nations without adequate privacy laws.

Companies on both sides of the Atlantic say they are concerned that the proposed new rules would make it impossible to carry out even the most routine business activities. However, some privacy experts say the suggested measures are warranted and that U.S. companies operating in Europe need to be curbed as much as anyone.



"American multinational industries are used to transferring personal information from one country to another with reckless abandon," says David H. Flaherty, a privacy expert at the University of Western Ontario.

The proposal's strongest proponents, mainly France and Germany, say the rules are needed to prevent abuses in countries without privacy laws. Belgium, Greece, Italy, Portugal and Spain are among the countries that need stronger laws, according to the EC.

Even without a directive, some countries have been pursuing a course of independent enforcement. In 1989, for example, the French government temporarily stopped Italian auto maker Fiat S.p.A. from transferring its French personnel records to Italy because privacy laws there were not up to French standards. Fiat later signed an agreement with the French government, vowing to adhere to French law in its handling of the records.

It is uncertain whether U.S. privacy laws are up to European standards. Last year, the Commission National d'Informatique et Liberte, the French government's privacy protection agency, contacted IBM after the company said it was planning to transfer personnel records from France to the U.S. IBM is still holding talks with the agency.

U.S. privacy laws enacted in 1974 to protect citizens from government snooping do not extend to businesses. Congress is now considering a bill that would set up a Data Protection Board to advise the public and private sectors on privacy issues, but this proposed board would not have regulatory powers.

The Privacy Directive, if passed as drafted, would be written into law at the beginning of 1993. In addition to prohibiting the transfer of data to certain countries, where security laws are not deemed adequate, the proposal would: require companies to register databases containing personal information, require that the subjects of files be informed when data is used and give their consent, mandate that data be protected against unauthorized access and provide for minimum security standards.

— Michael Alexander

Ideas that **TRAVEL** *and some that don't*

Does this sound familiar?

Andrew Milner at the London-based consultancy Butler Cox PLC says UK companies have been pushing more functions out to the business units, but some companies are now reverting to a centralized structure with IS go-betweens posted in business units.

Telecom and elevator repair

In Switzerland, telecom is still frequently considered part of building maintenance.

Sometimes stereotypes can work for you

Are Americans sometimes insensitive to the subtle national differences in Europe? Yes, says Vernon Ellis, managing partner for Europe at Andersen Consulting's London office. But he hastens to add that this isn't necessarily a bad thing. "The advantage is, they can cut through and get things done in one consistent way."

Other local observers agree and suggest that Americans can get away with more in terms of sidestepping or ignoring local customs than any European ever could because the locals just assume Americans don't know any better.

Tom Moore, president of DMR Group, Inc.'s European division, headquartered in Gouda, the Netherlands. *Advice on blending in*: Do not call people by their first names. Do not depend on being able to do as much by phone. "Europeans do not have our sense of informality and often prefer to see things in writing." And do not give someone the title of "manager" if you want him to play a hands-on role. In many parts of Europe, "managers don't do things; they stay in their offices and manage."

Tech specialties

Europe is a leader in a number of technology areas:

1. Installing and using massively parallel computer systems.

2. HDTV. Vision 1250 (for 1250 scanning lines, double the current number on European television screens) is a high-definition project launched last year.

3. Research in machine translation systems and computations linguistics to permit easy exchange of information across multiple languages.

European Know-How

▶ Approachable technology

Adam Crescenzi, executive vice president and managing director at CSC Index, Inc. in Europe, says U.S. companies could learn a thing or two from Europe in terms of the human engineering of systems. Europe is far superior in this area, he says, and France is the leader. All banks there have home banking arms, and all systems have videotext built into them.

Another example of this ability to make technology look and feel familiar can be seen at Eurocontrol, the official European organization for air navigation security. The highly specialized digital radar terminals at Eurocontrol's air control center in Masstricht, Holland, simulate the familiar look of a World War II-vintage analog radar screen.

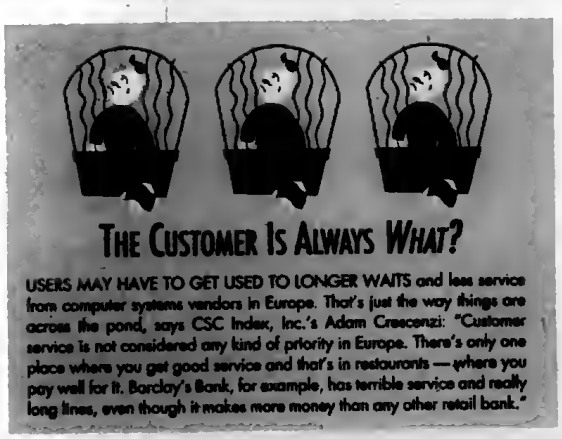
▶ Simplicity of design

Leonard Cohn, vice president of information services at Monsanto Co., says Europeans are far more careful about adding complexities to things because they've lived with multiple languages, multiple currencies and multiple sets of laws for so long. "When Europeans design systems," he says, "they try to minimize the complexity, because they understand better what it's like to live with complex systems."

Horsepower=firepower:

Particularly in Germany, but also in some other places, the car is considered a measure of the man, according to DMR's Tom Moore. If you want to be taken seriously as a manager, he recommends, don't drive an inexpensive car.

Furthermore, he warns, any company staffing a European operation should be prepared for the possibility that "all the senior people, and maybe even all the people" will expect to be provided with a car, without having it counted as part of compensation.



W. J. Griffith, a group director at the National Centre for Information Technology, a London-based membership organization that includes 2,600 data processing managers and IS directors in the UK.

On what Europeans could learn from the U.S.: "Here, there's not that close relationship between the universities and business community," Griffith says, adding that much of his information on strategic IS has been gleaned from work coming out of the Harvard Business School and MIT's Sloane School. British schools have a strong tradition of independence, he explains, and the idea of business-sponsored research is just beginning to be accepted.

On what U.S. IS managers could learn from Europe: "You tend to throw money at a problem, and research in a more limited way . . . we are less cavalier and tend to study problems a bit more."

Maneuvering room

Bruno Zuccaro, director of IS at Benetton SpA, thinks American IS managers are too narrowly defined in their concentration on technology. In his experience, Zuccaro says, his U.S. counterparts are very "sector bordered," he says, while his responsibilities involve the whole business.

Projects to watch

Esprit (the European Strategic Program for Research and Development in Information Technology), a program sponsored by the EC and more than 1,600 participating organizations, is now moving into a second phase, which will see funding for basic research double. More stress will be put on user participation and technology transfer and acquisition.

Part of this new round of activities is a European Software and Systems Initiative aimed at improving the productivity and quality of software-intensive systems.

Another major Esprit effort just getting under way is the Open Microprocessor Initiative (OMI). This project is expected to last about five years and cost about $397 million. OMI will focus on designing a 100 million-transistor processor that supports Unix.

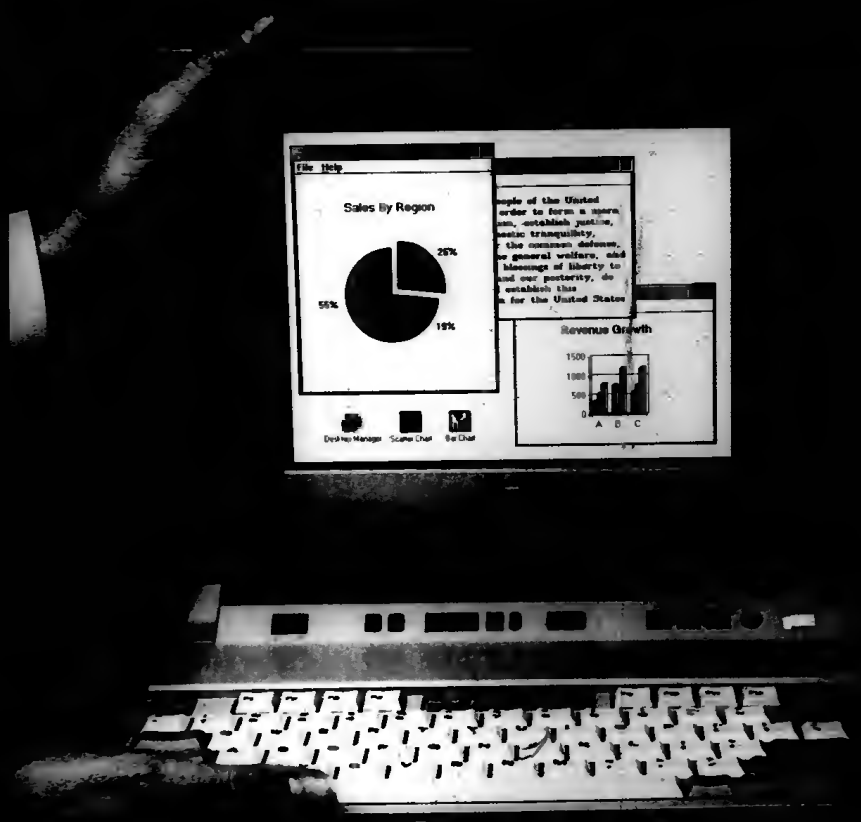
Weights and measures differ

In Europe, the IS manager is seldom a business heavyweight. As a result, the concept of chief information officer does not translate well. Europeans know what it means but almost never have a position that corresponds to that title. Hans Brunner, a consultant at Andersen Consulting in Switzerland, says an IS manager is often considered part of the logistics function and frequently reports to finance and accounting.

Habits they'd rather not pick up:

- Fast cycling of employees — There's a widespread perception in Europe that U.S. companies hire and fire too much.
- Short-term mentality — They say U.S. companies give up on projects that don't have immediate payback.

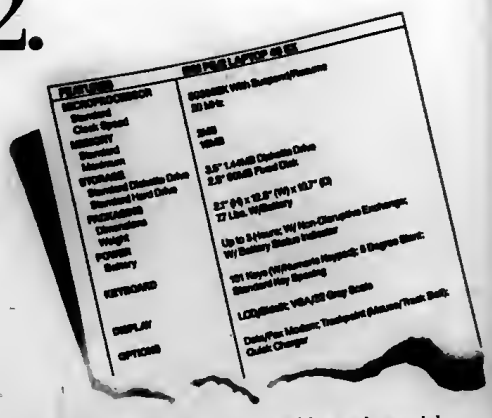
The body of
The heart and



a laptop. soul of a PS/2.

Introducing a PS/2 Laptop That's Full Of Features. Not Compromises.

Making a computer light enough to take anywhere and small enough to sit on a lap isn't enough. Making it perform like one that sits on a desk is the true challenge. That's why IBM has created a computer that delivers true portability without sacrificing true performance—the Personal System/2® Laptop 40 SX. At just 7.7 pounds it's clearly a lightweight computer. But it certainly doesn't act like one.



Desktop Performance, Without The Desk.

The PS/2® Laptop looks great from the outside. But its true beauty lies inside, where you'll find uncompromised computing power. It has the same 386SX™/20 MHz processor found in best-selling desktop models. A 3.5" 1.44MB disk drive and 2.5" 60MB fixed disk provide fast access to programs and data, and standard 2MB RAM is expandable to 18MB.

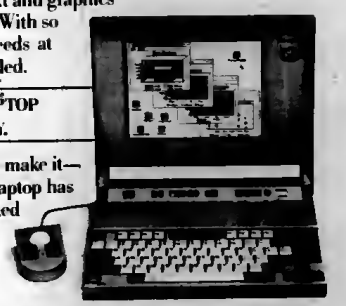
Instead of compromising comfort by altering the keyboard, the PS/2 Laptop has a full-size keyboard spaced and arranged the same way as a desktop PS/2's. And instead of squeezing information onto a pint-size screen, it has a sidelit LCD that offers a 10"-diagonal viewing area. It delivers sharp, clear text and graphics with VGA quality in 32 shades of gray. With so much to offer, the PS/2 Laptop succeeds at being small, without being small-minded.

The PS/2 Laptop Is One Laptop Not To Be Taken Lightly.

IBM knows it's not how small you make it—it's how you make it small. The PS/2 Laptop has system status icons that monitor assorted functions and battery life. Extensive power management controls include the ability to change batteries in the middle of an application without exiting and a special feature that suspends power when the screen is closed, then returns to full power when reopened, resuming applications where they were left off without the need to save to the hard drive.

Of course, it comes with an AC adapter, and a 2400 BPS Data Modem/9600 BPS Fax Modem is available, as well as a special mouse that doubles as a trackball when turned over. And the PS/2 Laptop comes with something no laptop should be without—an international warranty* backed by thousands of Authorized Remarketers worldwide, so service and support are never far away.

To find out more, contact your IBM Authorized Remarketer or IBM marketing representative. You'll see why with the new PS/2 Laptop, you don't need a whole lot of room to get a whole lot of computer.



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The IBM LaserPrinter.

Other than being 25% faster, with a smaller footprint, and powerful options like 3 paper input sources, 3½ times the paper capacity, 5 times the envelope capacity, and automatic collating, it's a lot like the HP LaserJet III.

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Suddenly, nothing else measures up.

LaserPrinter

A product of Lexmark.

Horwitt

FROM PAGE 43

their medical supplies electronically. Result: lower cost and faster reordering for the customer; higher sales for American Hospital.

Of course competitors rushed to come up with similar systems, but in the meantime, the pioneers had a clear edge. And companies can still get an edge with such systems by using their creativity to come up with new value-added services.

So what kind of breakthrough ideas have people been implementing lately?

One promising development is the electronic "preferred shopper" card. The card provides the shopper with an electronic payment system, along with automatic discounts or rebates. And it automatically records everything a given shopper buys. It could revolutionize the checkout process and take targeted marketing to new heights.

ONE PROMISING development is the electronic "preferred shopper" card.

Most major packaged goods companies are participating in pilot tests of this technology — indeed, the system will work only if a lot of major brands participate. That means the competitive edge will come not from the system itself but from the way a given company uses the information it collects.

For example, some companies are already using the system to counteract the consumer's purchase of a rival brand, right at the cash register. If you buy Pepsi, the system automatically issues a coupon toward the purchase of a six-pack of Coke.

A more creative, long-term application for the system is to use the checkout data to compile a list of consumers who regularly buy a particular type of product — such as on-sale items or low-fat or sugar-free brands — and target these people with value-added mailings that offer recipes, shopping guides and discounts on the company's own low-fat or sugar-free brands.

The communications carriers are also working on some electronic ties that bind — this time in the network management area. Fortune 500 companies have long demanded more control and a better view of their particular circuits on a carrier's network.

All three major long-distance carriers, along with a few leading-edge Bell operating companies, have been introducing services to allow customers to monitor and reconfigure their own circuits more quickly, in order to respond to disasters and sudden traffic spikes.

What customers would like, however, is a system that manages the typical large corporation's hybrid network, which combines local and long-distance carriers, public lines and private telecom equipment.

The big three long-distance companies have all promised services of that type but are still a long way from practical application. AT&T's Accumaster, particularly with its tie to IBM's Netview, is a strong frontrunner here.

Sooner or later all the major players will provide something along the above lines; and again, the competitive edge will go to whoever comes up with the best value-added services and information. For example, smart carriers already provide network traffic reports that identify trouble spots in terms of response time or outages. To this could be added "what-if" scenarios that analyze the cost vs. response time of upgrading or reconfiguring the network in various ways.

A savvy carrier might even include its competitors' tariffs among the options offered. This might lose revenue over the short haul but could generate a much higher degree of customer loyalty in the long run.

Anyone else got some good ways to wind that golden thread?

Horwitt is a Computerworld senior editor, networking.

NEW PRODUCTS

Customer premises equipment

Digital Link Corp. has devised the DL200 SMDS converter.

The converter connects local-area networks to T1 Switched Multimegabit Data Service wide-area networks via V.35 and RS-449 interfaces. The DL200 is based on the SMDS Data Exchange Interface, or DXI.

The DL200 SMDS converter is priced at $6,195.

Digital Link
252 Humboldt Court
Sunnyvale, Calif. 94089
(408) 745-6200

Watch Hill Research, Inc. has announced data compressors for high-speed T1 and fractional T1 lines.

The Time Machine T1/E1 can be added to installed data service- unit/channel service units and provides compression rates from 2:1 to 6:1. The product also compresses data over backup switched lines in the event of a T1 failure. RS-422 and V.35 interfaces are supported.

The Time Machine T1/E1 costs $11,495 for a 120-V version and $11,995 for a 220-V version. The CFT-1 version for fractional T1 communications costs $9,495 or $9,995, depending on voltage.

Watch Hill Research
204 Spencer Ave.
East Greenwich, R.I. 02818
(401) 885-8690

Kentrox Industries, Inc., a subsidiary of ADC Telecommunications, Inc., has announced a device that incorporates the functions of multiple digital transmission devices.

The Multirate DDS-II Data Service Unit Model 300 supports data transmission speeds from 2.4K bit/sec. to 56K bit/sec. and AT&T's Dataphone Digital Service. It features automatic rate and service selection, an optional IBM Netview management system interface and a time division multiplexer.

The stand-alone Model 300 costs $795. A rack-mount card version is priced at $745. The Netview option costs $775.

Kentrox Industries
14375 N.W. Science Park Drive
Portland, Ore. 97229
(503) 643-1681

Verilink Corp. has announced the ConnecT1 Plus, an addition to the company's ConnecT1 data service unit/channel service unit (DSU/CSU) product line.

The ConnecT1 Plus provides performance monitoring and remote management for T1 telecommunications lines using the company's Verinet 2 Management System. The product supports connection of devices such as local-area networks, video-conferencing equipment and mainframes at data speeds ranging from 56K bit/sec. to over 1.5M bit/sec.

Modular configurations supporting up to two T1 lines and six DSU application ports are available. The standard configuration of one T1 line and two application ports costs $4,365.

Verilink
145 Baytech Drive
San Jose, Calif. 95134
(408) 945-1199

Wide-area networking software

Radio Frequency Network Systems, Inc. has introduced a software product providing data compression on both private and public networks.

RF/Compress utilizes an algorithm assigning the shortest bit pattern to the most frequently used character in the information being transmitted. The company reported an average resulting compression rate of 40%.

The software can be utilized by any system supporting C language routines. A Motorola, Inc. KDT-840 radio frequency device is required on the receiving end.

Pricing for the software averages approximately $150,000.

Radio Frequency Network Systems
7545 S. Madison St.
Hinsdale, Ill. 60521
(708) 325-9300

MANAGER'S JOURNAL

EXECUTIVE TRACK

Itel Rail Corp. in San Francisco, the nation's largest railroad equipment leaser, has named three people to the position of director in its information systems and technology department:

Kathy Cruz was named director of information technology with responsibility for Itel Rail's overall technology environment, including telecommunications, systems engineering, database administration and end-user computing.

Cruz joined Itel Rail in 1990 from the University of California at Berkeley, where she was manager of the IS department. She holds a bachelor's degree in sociology from the University of San Francisco.

Kathy Davidson was named director of IS and is responsible for Itel Rail's internal financial, operational and administrative systems.

She joined Itel Rail in 1984 and has held several management positions in IS. Before that, she worked at Ampex Corp. in Redwood City, Calif., as a programmer and analyst. Davidson holds a bachelor's degree in computer science from Northern Illinois University.

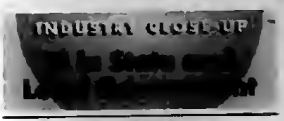
Alan Smith was named director of IS. He is responsible for customer-oriented applications such as electronic data interchange, electronic data access and electronic mail.

Smith joined Itel Rail in 1984 and led the team that developed Iris, an application that provides Itel Rail's short-line customers with comprehensive car tracking and railroad planning data. Before joining the company, he was a project leader at Western Pacific Railroad.

Smith holds a bachelor's degree in computer science from the New York Institute of Technology. He is a member of the National Industrial Transportation League.

IS eases public sector crisis

Public agencies use systems to deliver service despite budget cuts and layoffs



BY SUZANNE WEIXEL
SPECIAL TO CW

Budget cuts. The need to do more with less people. A day in the life of your typical Fortune 1,000 corporation? Nope. Welcome to the world of state and local government.

Like their private sector brethren, public agencies are in the midst of a fiscal crisis and personnel crunch. Many are relying on efficient use of information systems to keep service levels as close to normal as possible.

According to the National Association of State Information Resource Executives in Lexington, Ky., 27 of the 32 states that took part in a recent survey said they are experiencing cutbacks in budgets; 15 are responding to those cuts with personnel restrictions, including layoffs.

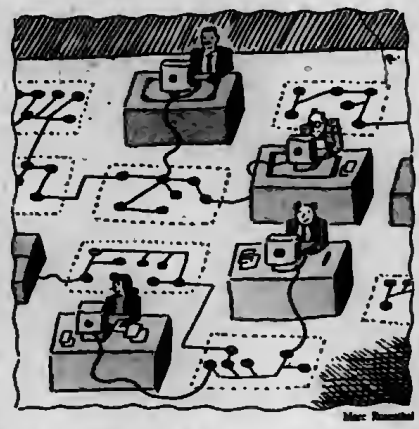
The IS measures the states are taking to keep service levels up despite cutbacks include improving the performance of existing systems; consolidating resources such as IS equipment, software, data and personnel; and long-term systems planning.

Not enough bodies

"Under stress of personnel [constraints], government agencies are becoming smarter about the way they leverage information technology to overcome budget limitations," says Sheldon Cohen, a vice president at MMA Consulting Group, Inc. in Boston.

In Texas, state agencies started 1991 with a 1.5% budget reduction. The state is also facing a projected revenue shortfall that will require agencies to operate at 90% of their current budgets. The outlook for 1992 is bleak.

For Jim Brandes, director of information and human services at the Alamo Area Council of Governments in San Antonio — one of 24 regional planning commissions — the fiscal news hasn't been good for a while.



Marc Rosenthal

For example, a Reagan-era decision in the early 1980s to eliminate a federally funded community planning assistance program left the Alamo Area Council $180,000 short but still responsible by Texas law for reviewing and commenting on all community assistance applications in its county. Without the money, the state could no longer afford to pay the four full-time employees administering that program.

To continue its application work, Brandes says, the council implemented an office automation system based on a Prime Computer, Inc. supermicrocomputer running Unix. This system automated basic clerical functions.

Now, he estimates, administering the review and comment process takes only a few hours each month at a cost of about $18,000 per year.

Also in Texas, a centralised database is helping the state's Rehabilitation Commission (which helps disabled Texans return to the work force) keep up with a 20% increase in the number of applications received over the last four years. That's important, says Kay Arnold, director of the commission's Software Development Center, because budget restrictions during that time have decreased staff by 3%.

The centralised database lets counselors access client background information and program financial information. Automation of such clerical functions as application entry and report generation has reduced the amount of time a counselor spends on an application and report from at least 2½ hours to at most 1½ hours. This improved efficiency has enabled the commission to serve more people while remaining at its 1989 staffing

Continued on page 50

Resume writers knocking on the wrong door

BY CLINTON WILDER
CW STAFF

On billboards all around the country, flashy tennis star Andre Agassi is hawking cameras by proclaiming, "Image is everything." However, a majority of job-seeking information systems executives still project the wrong image in their resumes and job interviews, according to IS placement experts.

Too many IS job seekers still tout specific technical skills instead of the business value they have brought to their companies. "It's not unusual to see resumes with the whole litany of hardware and software platforms that are out there, instead of business accomplishments," noted Richard Wonder, national director of the IS division at Robert Half International, Inc. in New York.

Such "mislabeling" can take its toll. New York IS search firm John J. Davis & Associates, Inc. estimated that a laid-off IS executive takes six weeks longer to find a new job than does his counterpart in other functions.

"We see many high-quality information services people who are woefully unprepared to face the rigors of a job search," company President John J. Davis said. "And compared to those in other functions, executives in information services do not know how to network effectively," he said.

Major roles on resumes

Another resume problem, according to Davis, is the listing of projects in which the executives have been involved — without adequately explaining their role or how they made a difference in the project's success.

Davis' firm has started a job-market effectiveness training program for IS job seekers in an effort to correct those missteps.

Wonder said he does not necessarily agree that the IS job search takes longer than job-searches in other fields but does concur that poor job search strategies are costing IS professionals some major opportunities.

"Corporate downsizing to smaller platforms is creating a new category of managers in business units," Wonder pointed out. However, packaging is key. If you're mispackaged, you won't be a candidate for those positions."

Everyday tech help

Not all cost containment measures require major computer systems. State and local agencies are turning to some everyday technologies in an effort to conserve funds for use in direct service to the public. For following are some examples:

- Electronic mail can cut down on telephone costs and time.
- Automated message systems and voice mail can free up support staff and improve efficiency of message delivery.
- Facsimile machines can cut down on postage, paper and handling costs.
- Teleconferencing can reduce travel expenses.
- Desktop publishing can reduce production costs for brochures, reports and other printed materials.

SUZANNE WEIXEL

Public crisis

FROM PAGE 49

levels, Arnold says.

The state of Kansas' Office of Vital Statistics went through a budget and staffing crisis of its own in 1987 when changes in federal laws requiring proof of citizenship and so on caused the demand for birth certificates to increase by more than 6,000 requests each month. Unable to obtain funding for new staff members and desperate to maintain service levels, the agency automated the collection, storage, retrieval and dissemination of vital records.

The project, implemented three years ago, entailed updating mainframe-based accounting and indexing systems, implementing an electronic birth certificate system and linking them with an optical storage system.

Lorne A. Phillips, the state registrar and director of the Division of Information Systems for the Department of Health and Environment, says the system has improved overall efficiency despite the loss of 105 local registrars. It cut turnaround time on a request for a record from five to six weeks to a few minutes, he says.

He adds that the increased efficiency and increased revenue resulting from the completion of a greater number of paid-for records requests will more than make up for the $1 million cost of the system in a five-year period.

Phillips claims the office would not be functioning at all right now without the system.

States in crisis

Personnel constraints have hit the East the hardest

A June 1991 newsletter from the National Association of State Personnel Executives delineates the 50 states' and Puerto Rico's plans for their staff. Thirty-two states are not laying off staff, but of these, 11 are implementing plans for hiring freezes. Only one state, Nevada, plans to add positions.

Following are the hardest hit states:

- **California:** Tentatively, expects 21,900 employees to be laid off. Implemented plans for across-the-board cuts, hiring freeze.
- **Connecticut:** Expects to lay off approximately 1,000 employees. Has implemented plans for hiring freeze.
- **Illinois:** Expects to lay off approximately 1,400 employees.
- **Massachusetts:** Expects to lay off 7,000 employees total. Has plans for across-the-board cuts, more layoffs, hiring freeze.
- **Michigan:** From January to March, there were 1,120 layoffs. Plans for across-the-board cuts, hiring freeze.
- **New Jersey:** May lay off 1,000 employees in fiscal 1991. Has implemented plans for across-the-board cuts, layoffs, hiring freeze.
- **New York:** So far, has laid off approximately 3,000. Goal is to lay off 18,000 by 1992.
- **Pennsylvania:** In February, 1,360 employees were laid off. A hiring freeze has been in place for three years.

CW Chart: Marie Haines

Department budgets have been falling by up to 11% a year, and across the board budget cuts to state agencies are expected to start at 2% in fiscal year 1992.

The state of California faces a $14 billion deficit for fiscal year 1992 and is forecasting layoffs of 21,900 employees. In response, the Los Angeles Municipal Court system is ready to expand to six other courts a traffic records optical disc imaging system piloted in the Los Angeles metropolitan and Van Nuys, Calif., branch courts in 1989. The pilot program saved the county $501,298 and approximately 16 clerical positions.

In addition, the project has enabled the state to collect $62,000 in fines each week that would have been lost with the old manual system due to the time-consuming and error-prone process of matching warrants with the original citation before issuing them.

Even while departments and agencies are looking to technology to keep them providing services, they are mindful of how much technology they need and how to keep associated costs down. Data centralization and information sharing are in.

For example, New York state's $28.7 billion budget for fiscal 1992 includes $1.6 billion in service cuts and a projected 10,000 government job eliminations. Anticipating cuts in aid to cities and towns, Sal Salamone, director of computer plans and controls at the New York City Mayor's Office, helped plan for consolidating the city's 11 data centers into two.

In January 1991, a pilot consolidation of one data center into another took place. Salamone estimates that the merger will result in $7 million in savings and a cost avoidance of 60 full-time data center employees over three years.

Filling the personnel void with technology can be an effective stopgap in difficult times, according to Robert Graves, executive director at the Government Technology Conferences in Sacramento, Calif.

Kansas' Phillips has taken this advice to heart. He anticipates a $70,000 to $80,000 shortfall in state fund allocations in 1993. However, that is when the automation of his vital statistics system will be complete and his planning will pay off, he says. If necessary, six full-time IS positions can be eliminated.

Weinsl is a free-lance writer based in Framingham, Mass.

System reduces fraud

Some by-products of more efficient, cost-conscious government agencies are a reduction in fraud and the costs associated with it.

Lorne A. Phillips, Kansas state registrar and director of the Division of Information Systems at the Department of Health and Environment, says that before the state's Office of Vital Statistics was automated, a full-time IS staff member was dedicated to uncovering fraudulent requests for important papers. Now, the time spent on that task has been reduced by 60%.

Phillips explains that birth and death records were never matched in the manual system; therefore, it was relatively easy to obtain fraudulent birth records. Now, the system automatically cross-references those records and puts requests through built-in security checks.

In the past six months, the Office of Vital Statistics has uncovered six false requests. Phillips brags that con artists "can't get away with it in Kansas anymore."

SUZANNE WEIXEL

MANAGEMENT SHORTS

Apache opts for outsourcing

Apache Corp., a Denver-based independent oil and gas producer, has signed a five-year outsourcing contract with Power Computing Co. in Dallas. Specific terms of the multimillion-dollar pact were not disclosed.

Power Computing will provide hardware, software, systems programming, capacity planning, data storage and telecommunications to Apache's offices in Denver, Houston and Tulsa, Okla. Apache's information systems department will retain responsibility for applications development and support, database administration, job scheduling, disaster recovery, data security and personal computer/local-area network support. Apache considered outsourcing after its May acquisition of an Amoco Corp. oil production subsidiary expanded its processing needs.

The International Association of Knowledge Engineers has expanded its certification program for artificial intelligence professionals outside the U.S. In the coming months, the Rockville, Md.-based association will offer its Certificate in Knowledge Engineering examination in Canada, Spain, Japan, the UK, Mexico, the Netherlands and France.

In addition, the association has set up an electronic job bank for AI professionals. The fee schedule for participation is $25 for association members and $50 for nonmembers.

Infomart has announced a new service that assists IS executives with meeting planning and technology evaluation. Called CIO Services, the program offers meeting facilities at Infomart in Dallas. Participants can also schedule technology demonstrations from Infomart's resident technology firms, including IBM, AT&T, Novell, Inc., NCR Corp. and Apple Computer, Inc.

Gemini Consulting, the firm recently formed by the merger of United Research Co. and The MAC Group, has acquired a minority interest in Parcplace Systems, a Mountain View, Calif.-based supplier of object-oriented applications development environments.

Thomas Madison, senior vice president at Gemini Consulting, has been elected to the Parcplace board of directors.

Stardent Computer, Inc. named three recipients of its Better World Awards at the recent Siggraph '91 show in Las Vegas.

The oceanography section of the National Center for Atmospheric Research won in the environment category for its visualization application that accurately predicts the long-term evolution of global climates.

The Wistar Institute won in the health and medicine category for the first three-dimensional representation of the deadly adenovirus.

The human safety category's award was won by the Lawrence Berkeley Laboratory for an application that can determine the effects of radioactive contamination. Picker International won the John William Poduska Award for its medical diagnostic imaging equipment.

The Automotive Industry Action Group in Southfield, Mich., has formed four new work groups to address emerging trends in computer-aided design and manufacturing technology impacting the automotive industry.

More information on the groups is available by calling Associate Director Henry Veldman at (313) 358-3570.

CALENDAR

The 33rd annual Retail Information Systems Conference will be held Sept. 29-Oct. 2 at the Hyatt Regency Hotel in Chicago.

The keynote speaker is Stephen E. Watson, president of Dayton Hudson Corp. Sessions will feature IS and business executives from many leading retailers, including Sears, Roebuck and Co., Kmart Corp. and The Gap, Inc.

For more information or to register, contact the National Retail Federation, Inc., New York, N.Y. (212) 563-5113.

SEPT. 1-7

Human Factors Society Annual Meeting. San Francisco, Sept. 2-6 — Contact: Human Factors Society, Irvine, Calif. (714) 752-7886.

Very Large Data Bases (VLDB). Barcelona, Spain, Sept. 3-6 — Contact: VLDB '91-Difusora de la Information, SA, Barcelona, Spain (011-34) 3-418-8667.

10th Annual International Conference on Enterprisewide Information Management. St. Louis, Sept. 4-6 — Contact: Washington University Center for the Study of Data Processing, St. Louis, Mo. (314) 935-5380.

HP World. San Francisco, Sept. 4-6 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

Print '91. Chicago, Sept. 4-11 — Contact: Graphic Arts Show Co., Reston, Va. (703) 264-7200.

SEPT. 8-14

Development Center Institute Conference. San Diego, Sept. 9-11 — Contact: Development Center Institute, Inc., Indianapolis, Ind. (317) 846-2753.

Managing the Move to Workstation-Based Development — The Wave of the '90s. San Diego, Sept. 8-11 — Contact: Development Center Institute, Inc., Indianapolis, Ind. (317) 846-2753.

Telecon '91. Edmonton, Alberta, Sept. 8-12 — Contact: Canadian Business Telecommunications Alliance, Toronto, Ontario (416) 865-9993.

Software Development Week. Boston, Sept. 9-13 — Contact: Lisa Monson, Software Development Conference & Show Group, San Francisco, Calif. (415) 905-2414.

Disaster Recovery Symposium and Exposition. Atlanta, Sept. 9-11 — Contact: Disaster Recovery Journal, St. Louis, Mo. (314) 846-1601.

Symposium on the Computerization and Use of Materials Property Data. Cambridge, England, Sept. 9-11 — Contact: Teresa Czadowska, the American Society for Testing and Materials, Philadelphia, Pa. (215) 299-5546.

Navy Micro '91. Virginia Beach, Va., Sept. 9-12 — Contact: Navy Micro '91, Norfolk, Va. (804) 444-8487.

Data Storage Interface & Technology Conference EX. Sunnyvale, Calif., Sept. 9-13 — Contact: Technology Forums, Minnetonka, Minn. (612) 934-1415.

Digital Equipment Computer User Society (DECUS) Europe Symposium. The Hague, Sept. 9-13 — Contact: DECUS Europe, Petit-Lancy, Switzerland (011-41) 22-709-4264.

Wireless & Mobile Communications III. Washington, D.C., Sept. 10-11 — Contact: Telecommunications Reports, Washington, D.C. (202) 842-0520.

Data Storage. San Jose, Calif., Sept. 10-12 — Contact: Forum Management, Cartilage and Associates, San Jose, Calif. (408) 554-8644.

Downsizing Expo. Los Angeles, Sept. 10-12 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3000.

Government Neural Network Applications Workshop. Huntsville, Ala., Sept. 10-12 — Contact: Rose Kirkwood, U.S. Army Research Office, Research Triangle Park, N.C. (919) 549-0641.

Information Highways: Linking America for Interactive Communications. New York, Sept. 11-12 — Contact: Business Week Executive Programs, New York, N.Y. (212) 512-2184.

Alan User Conference. Monterey, Calif., Sept. 11-12 — Contact: Aion Corp., Palo Alto, Calif. (415) 328-9595.

ABCD: The Microcomputer Industry Association's Breakaway '91 Conference. Atlantic City, Sept. 11-13 — Contact: Deborah Keating, ABCD, Ridgeland, Miss. (601) 977-9033.

Software Publishers Association (SPA) Seventh Annual Conference. Orlando, Fla., Sept. 11-14 — Contact: SPA, Washington, D.C. (202) 452-1600.

SEPT. 15-21

International Electronics Packaging Society (IEPS) Conference. San Diego, Sept. 15-18 — Contact: William Ashman, IEPS, Wheaton, Ill. (708) 260-1044.

Data Administration Management Association International Symposium. Seattle, Sept. 19-17 — Contact: Bill Hansburg, Triadigm International, Los Angeles, Calif. (213) 622-0123.

Effective Methods for Information Systems Quality Assurance. Orlando, Fla., Sept. 19-12 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Federal Computer Conference. Washington, D.C., Sept. 17-19 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Auto-Tech '91. Detroit, Sept. 17-19 — Contact: Automotive Industry Action Group, Southfield, Mich. (313) 358-3570.

CASE Conference: Rebuilding for Software Automation with the 4 Rs of CASE. San Francisco, Sept. 17-19 — Contact: Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

Strategic Planning for Information and Systems. Houston, Sept. 18-20 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Network and Distributed Systems Management '91. Washington, D.C., Sept. 18-20 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Working with Personal Computer Local Area Networks. Milwaukee, Sept. 18-20 — Contact: John T. Snedeker, University of Wisconsin at Milwaukee, Milwaukee, Wis. (414) 227-3120.

Acusobol Developers Conference. San Diego, Sept. 19-21 — Contact: Acusobol, Inc., San Diego, Calif. (619) 680-7220.

Society of Telecommunications Consultants Annual Fall Conference. San Diego, Sept. 20-23 — Contact, Sheryl Bradley-Hansard, STC, Boca Raton, Fla. (407) 852-7071.

New technology: Taming the bull

New stand-alone technology is about as desirable as a loose bull in the data center. Sure, it might be exciting and powerful, but a technology that cannot be tamed and tethered to other computer, network and system applications is an unwelcome intruder.

Many computer companies, especially in artificial intelligence and imaging, have realized the importance of fitting into the whole organization and are quickly putting free-standing systems out to pasture.

John & Wendy

Many information systems organizations, eager to gain the benefits of cutting-edge information tools, are also hard at work integrating the latest advances, from voice technology to computer-aided software engineering, network document management and other emerging technologies.

Because companies and technologies differ widely, there are few rules about the best ways of integrating the two.

So, instead of focusing on general and not-too-helpful guidelines, *Computerworld* decided to ask leading-edge users about their specific efforts to integrate new and emerging technologies. Their stories follow.

The technologies that leading-edge users are taking advantage of fall into two categories: those in which various polls indicate there is a high interest, such as EDI and portable computers, and those that are still novel but fast-emerging, such as networked faxes and wireless local-area networks.

As the stories on the following pages show, the companies that have successfully deployed these emerging technologies and their applications are as varied as the tools themselves:

- Kmart Corp. uses bar coding to gather up-to-the-minute sales information for its buyers (see story below). Kmart, the No. 2 retailer in the U.S., also uses videoconferencing to improve field communications (see story page 60).
- Networked faxes have caught on at firms such as Vie de France Corp., Dow Jones & Co. and many others (see story page 54). These innovators are using server-based faxes to save thousands of dollars and hours while replacing nonnetworked fax devices.
- Field engineers employed by Aetna Life and Casualty Co. are linked to LANs via portable personal computers (see story page 56).
- The Travelers Corp. integrates infrared LANs with mainstream operations (see story page 56).
- Equipment giant Caterpillar, Inc. uses a global EDI network as the backbone of its just-in-time manufacturing operations (see story page 58).

Some of the companies used commercial systems integrators; others did not. But what unites these various applications is a shared realization that new technology that can't peacefully co-exist with the current stable of applications is unlikely to last long in the competitive arena.

JOSEPH MAGLITTA

Kmart's $1 billion bar-code bet

The nation's second largest retailer uses a nationwide system to track more than 100,000 items in each store

BY MEL MANDELL
SPECIAL TO CW

A pressing need to know "what sold yesterday" convinced Kmart Corp. that a $1 billion investment in bar coding was the retailer's key to success tomorrow.

Late last year, the nation's second largest retail chain finished installing a nationwide bar-coding system that tracks the 100,000 or so items carried in each Kmart store. The idea was to provide historical sales information, which could help corporate merchandise managers better select the billions of dollars in goods purchased by the chain each year.

All 2,250 Kmart outlets in the U.S. were equipped with networked IBM Personal Computer AT-based systems. These feed updated daily sales information via satellite into headquarters databases on Amdahl Corp. Models 5990 and 5995 mainframes and an IBM 3090 600S.

The result? During the Christmas season, markdowns on slow-moving merchandise were $87 million less than two years before, when only half the stores could scan, according to David Carlson, senior vice president of corporate IS.

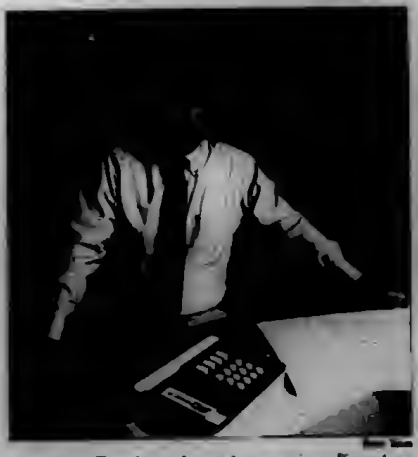
During the past seven years, Carlson says, Kmart, which posted annual sales of about $32 billion last year, has spent more than $1 billion on the bar-coding project.

Although Carlson says it's difficult to estimate how much the technology has boosted corporate profits, he notes that "our big investment in scanning is paying off faster than other investments in information handling. Kmart profits are up over 7% so far this year. Because of scanning," he continues, "we don't have to sacrifice profits to move merchandise."

The decision to bar code was made in 1982, but the project was not begun until 1984. A big boost was the creation of an internal Retail Automation Committee.

Composed of 30 to 40 people representing all involved departments, the group met every Monday to ensure that all members knew project status and to avoid any surprises.

Electronic Data Systems Corp. in Dallas joined the project in 1986 and has worked on it since.



Carlson: *Thanks to bar-code scanning, Kmart no longer has to sacrifice profits to move merchandise*

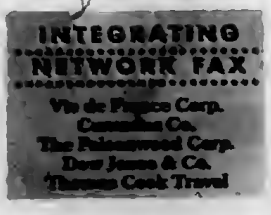
Planners decided to put two PC-based controllers in each store. These are linked via an IBM Token Ring local-area network to cash registers from Fujitsu Ltd., IBM or NCR Corp. Each of the 24 or so cash registers has a bar-code wand made by Metrologic Instruments, Inc. in Bellmawr, N.J., or Symbol Technologies, Inc. in Bohemia, N.Y.

Wireless handheld terminals from

Continued on page 55.

Mandell is a New York-based free-lance writer.

Network faxes well-received



BY JULIA KING
SPECIAL TO CW

Twice a week, 52 weeks a year, Vie de France Corp. used to divert one of its well-paid sales professionals from generating profits to feeding a fax machine for 20 hours. That's how long it took to send price quotes to the 250 restaurants that buy the McLean, Va., company's line of imported fruits, fish and vegetables.

Today, the sales department's stand-alone fax machine stands idle most of the time. Instead, price quotes and other fax documents are sent directly from a $3,000 local-area network-based fax server that information systems director Warren Fay says paid for itself in six weeks.

At Cummins Cash and Information Services Co., it took a little longer — three months — for a fax server tied to a network of mainframe-connected terminals to pay for itself. Since its installation, Cummins, a Grand Prairie, Texas, transportation services company, has pulled the plug on the 70 stand-alone fax machines it had used to send 8,000 truck permits a day.

"If a truck is sitting still, it isn't making money," says Art Sahlstein, Cummins' director of network operations. "Using the system, the fax permit is delivered in 10 to 15 seconds, often while the driver is still on the phone to us."

Bye-bye stand-alones

Vie de France and Cummins are just two of the growing number of businesses integrating fax, computer and network technology to streamline the costs, time and inconvenience commonly associated with fax transmission. Increasingly, network-based fax servers, which enable users to fax documents directly from personal computers and terminals, are replacing stand-alone units, which some experts say could be obsolete by the end of the decade.

By 1996, the market for LAN-based fax servers, including necessary software, will exceed $1 billion, according to research firm International Resource Development, Inc. Operating in much the same way as LAN-based print servers, today's simplest LAN-based fax servers consist of a PC board and accompanying software that transform a single networked PC into a LAN-based fax machine. Software on the fax server converts file data to fax form. It then sends the fax document over a modem in the board, just as a stand-alone fax machine would.

The total cost is about $1,000 for the network-ready fax card and another $2,500 or so for the PC in which it resides. Network fax products are sold by companies such as Gammalink Corp. in Sunnyvale, Calif.; Biscom, Inc. in Billerica, Mass.; Spectrafax Corp. in Naples, Fla.; and others.

From a user's perspective, the benefits of computerized or network-based fax are fairly straightforward: There's no need to print documents before sending them and no waiting in fax lines.

Fax servers also eliminate the need for multiple phone lines and reduce thermal paper costs because outbound server-based faxes are sent directly from PCs. Print quality is also better, Fay says. "Readability is key because if a customer can't read our price list, they're not going to buy from us," he explains.

Because network-based servers can be directed to send faxes at specified times, many businesses using them have substantially cut transmission costs by sending time-insensitive documents after business hours, when telephone rates are lower.

At The Falconwood Corp., a New York-based commodities trading firm, systems manager David Mace says sending customer statements from a LAN-based fax server during the night has saved the firm between $30,000 and $50,000 in transmission costs.

Mace estimates he saved another $25,000 or so by integrating a Gammalink fax server with the company's IBM Application System/400 minicomputer, used to handle customer statements. Previously, Falconwood had contracted with Western Union Corp. to fax customer statements, which were transferred to the carrier in batch mode, then reformatted and faxed out.

When Falconwood decided to bring faxing in-house to cut costs, Mace says, he looked at IBM's hardware and software fax options for the IBM midrange system. The solution involved writing software that converts AS/400 text files to fax format, he explains. These files are then downloaded to the LAN on which the Gammalink sits and are faxed out in the middle of the night.

"Once I saw how [IBM was] doing it, I said, 'I can do this myself with Gammalink for $3,000 instead of $30,000.' "

New opportunities

Initially less obvious than cost savings, IS executives say, are the new business opportunities possible when existing applications are integrated with either privately owned or public network fax technology.

For example, Princeton, N.J.-based Dow Jones & Co.'s Facts Delivered service was born when the firm's on-line news retrieval database was integrated with MCI Communications Corp.'s fax and electronic mail network services.

Falconwood's Mace: *Using a LAN-based fax server during the night has saved the firm more than $30,000*

Customers can call Dow Jones at a toll-free number and get a report containing stock quotes, earnings estimates, income statements and other news about publicly traded companies. Within four hours, this information — often amounting to dozens of pages — is available for pickup either at a fax number or at their MCI electronic mailbox.

"The end result is that we are expanding our customer base beyond regular on-line subscribers," says Mark Feffer, editor of database development at Dow Jones.

Feffer says Dow Jones looked at developing network fax capabilities in-house but opted to use MCI's fax and E-mail networks "so we could stick to our knitting in terms of publications and products," he says. Work done by in-house programmers was limited to writing file transfer and fax formatting software that links the news retrieval database to MCI, he explains. The program resides on PCs used by Dow Jones' 21 customer service representatives.

Thomas Cook Travel, a nationwide business travel company based in Cambridge, Mass., has gone a step further, integrating networked fax with voice technology.

Introduced in May 1990, the fax-based service, called Thomas Cook Express, lets customers use a Touch Tone phone to interact with a voice processing system — rather than a customer service representative — to receive a fax copy of flight and fare information within minutes of placing a call, says Chris Churchill, director of the express service.

Previously, Cook's customers could spend hours gathering flight information, presenting it to executives and then calling back with changes, Churchill says. Now, they receive a fax listing the best possible flights and fares one minute after calling.

Limits remain

Experts maintain that few technical limitations stand in the way of combining fax with other technologies and existing applications.

Judith Pirani, an analyst at BIS Strategic Decisions, a market research firm in Norwell, Mass., says the number of combination services may be limited only by users' imaginations. "Facsimile . . . works with all sorts of things," Pirani says. "It's a matter of putting the fax application on top of whatever computer and network technologies evolve."

While network fax servers have boosted the speed and efficiency with which users can send faxes, problems remain, particularly with inbound network fax traffic.

"There is no simple way of directing [the document] to the one in hundreds of users who may be on the LAN," notes Ken Bosomworth, president of International Resource Development.

For now, businesses using network-based fax service must continue to rely on stand-alone units for incoming documents. However, vendors are beginning to roll out enhanced servers capable of automated routing. •

quick FACTS

The number of computer fax devices in local-area networks will grow from 6,670 in 1989 to 198,200 in 1993, according to BIS Strategic Decisions in Norwell, Mass.

Integrating fax with electronic data interchange is also becoming popular. Among the companies doing this are Eastman Kodak Co. in Rochester, N.Y.; Union Pacific Railroad in Omaha; Tucson Electric Power Co. in Tucson, Ariz.; and Sullivan-Payne in Seattle.

King is a free-lance technology writer based in Ridley Park, Pa.

Continued from page 53

Norand Corp. in Cedar Rapids, Iowa, and Symbol Technologies are used by store managers and department heads to check prices when bar-code tags are missing from merchandise. The devices are tied to the controllers via s base station wired into each LAN.

Sales information, standardized via point-of-sale software from Post Software International, Inc. in Raleigh, N.C., is sent to headquarters each night. The controllers also receive and store revised price information from headquarters.

Initially, sales data was sent from individual stores to headquarters via phone lines in dial-up mode. But this required the automatic dialing of about 5,000 phone calls nightly. So in 1987, management approved the use of satellite communications as an alternative. A 50-store pilot employing a geostationary satellite and dish antennae at each store was s success and was eventually expanded chainwide.

Initally, a big problem was coping with the huge volume of data, Carlson says. Amdahl 8080-class machines were replaced with more powerful new IBM and Amdahl systems. New communications front ends from NCR Corp. and a 300G-byte unit from Teradata Corp. in El Segundo, Calif., were also added to speed up access.

The software needed to transfer and structure the batched sales information was written by Kmart's programming staff. Besides providing item-by-item reports to merchandise managers, programs were also written to generate "flash" reports of the previous day's gross sales for top management.

Close-up

Organization: Kmart Corp.

Goal: Provide merchandise buyers with up-to-the-minute sales information.

Strategy: Invest nearly $1 billion in equipping more than 2,200 Kmart stores with bar-coding systems. Deliver current information via satellite to corporate IBM and Amdahl Corp. mainframes.

Payoff: Fewer merchandise markdowns, faster customer checkout, better control of inventory.

Local fine-tuning

Headquarters programmers also constructed demographic models to account for regional and special variations. For instance, all stores in and near college towns use s model that tracks when the schools are in session and what types of apparel students buy. To keep these models up to date, Carlson adds, 20 demographers roam the U.S., checking on the metamorphosis of store neighborhoods.

Ironically, Carlson says, the main problem in integrating the global scanning effort had nothing to do with technology. Instead, the biggest headache was the reluctance or inability of some vendors to attach proper bar-code labels to the merchandise they shipped to Kmart.

To cope with the problem, Kmart is "putting more and more heat on deficient vendors" in the U.S. and abroad, Carlson says.

Company officials say much of the benefit of the bar-coding system comes from fast ability to react to market shifts.

For example, early in the 1990 Christmas season, porcelain dolls weren't selling well at $29.88. So the merchandise manager for toys cut the price nationwide to $24.88. Sales jumped so much that the price was soon raised to $29.88. Again, sales plummeted.

After several days of experimentation, the price was set slightly above $24.88. Nearly all the dolls were sold before Christmas. Very few were left to he sold after December 26 at half price. Kmart officials say such finely tuned price adjustment would have been impossible without an integrated bar-coding application.

Besides saving on markdowns, the new technology also enhances the image of Kmart's stores in two ways, according to Carlson. First, bar coding speeds checkout by about 25%, which is especially important during busy holiday seasons. Second, it ensures that desirable seasonal items will he in stock because merchandise managers know what is selling early enough to reorder.

Right now, some 1,750 other Kmart units — Canadian Kmarts, Waldenbooks, Pay Less Drugstores Northwest, Inc., Builders Square, The Sports Authority discount chain and other smaller retail chains — are not mandated to adopt the bar coding.

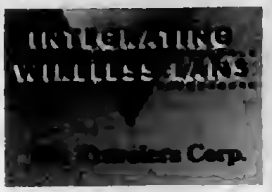
However, Carlson says that because of Kmart Chief Executive Officer Joseph E. Antonini's enthusiasm for the technology, he expects the other independently managed units will follow suit. •

quick FACTS

Airlines, retailers, corporate mail rooms, small manufacturers and transportation services are the fastest growing markets for bar codes, says trade group Automatic Indentification Manufacturers, Inc. (AIM).

Sales of automatic identification equipment grew to more than $3 billion last year and is expected to grow 15% to 20% per year through 1994, AIM says. New standards, scanning equipment and techniques are fueling growth.

Infrared LANs shine brightly at Travelers



BY M. J. RICHTER
SPECIAL TO CW

To integrate wireless local-area network technology with existing systems and applications, installers at The Travelers Corp. need three things: a wrench, a screwdriver and a little time — maybe two or three hours.

For nearly a year, the insurer has been using Infralan, an IBM Token Ring-compatible product based on infrared technology and made by BICC Communications in Auburn, Mass.

The $2,995 units have helped the Hartford, Conn.-based insurance giant save $90 per workstation each month — all without political battles, explains Nick Blazensky, manager of site design at Travelers' Telecommunications Division.

More importantly, the time required to get LANs up and running has been reduced from between 30 and 150 days to just a few hours, he says.

"There's no real integration of any new technology except the technology of the product itself," Blazensky explains. "We just have a new medium, and that happens to be light instead of copper."

Travelers' Blazensky: *Integrating wireless LANs with existing systems was fast, easy and inexpensive*

Installers from the information systems department can get three base units up and running in about two hours, Blazensky says. The worst case, he says, is three hours for four base units.

Travelers, which has an installed base of about 35,000 personal computers and about 10,000 employees on LANs, says it does not intend to replace IBM Token Ring LANs with wireless Infralans. Instead, it will use them in addition to or in lieu of cabled LANs when time and money dictate, Blazensky says.

Each LAN can accommodate between four and six users. Currently, about 50 Travelers employees, representing every department, are using the systems.

Blazensky notes that because there are no integration problems, Infralan has "no impact whatsoever" on Travelers' applications or users. "It goes right across our board" of applications, he says.

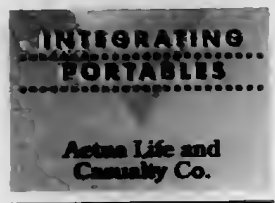
Installation involves aligning bar graphs on the base unit with optical nodes; two optical nodes interface a six-port base unit with associated PCs.

While cabling a high-end IBM Token Ring network costs Travelers as much as $100 per workstation per month, implementing an Infralan configuration costs about $10.

Because a wireless LAN is a reusable resource, Blazensky says, Infralan's costs, amortized over five years, amount to between 30% and 60% of those costs associated with copper. In fact, it was the cost of employee mobility — both money and time — that

Richter is a free-lance writer based in Arlington, Va.

Aetna links laptops and LANs for field engineers



BY MICHAEL FITZGERALD
CW STAFF

When Aetna Life and Casualty Co. downsized to local-area networks through much of its operation, it decided to give its field engineers laptop computers that linked into the LANs.

Faster communications and work turnaround are the main benefits, says Ramon Padron, director of field operations for Aetna's field engineer groups. "We have cut several days — as many as six to seven — out of the information loop between underwriters and engineers," he says.

Aetna's 500 field engineers are responsible for working with the Hartford, Conn.-based company's insurance customers to develop safer work environments and to collect information to allow Aetna to underwrite accounts more effectively.

The engineers work mostly out of their homes, although each spends some time in one of the 45 domestic offices. In the past, handwriting and mailing reports caused delays. Aetna decided to take advantage of its shift to Novell, Inc. Netware 386 networks in late 1989 by automating field engineers with laptop computers.

"We had a network moving toward completion, and the biggest challenge was to make a mechanized computing system that would really be used — and used with satisfaction — by the field engineers," Padron explains.

That few of the engineers were computer literate was less of a problem than teaching them how to type, which took six months. Since then, the engineers have taken to the computer system "like fish to water," Padron says. "They are now all highly computer literate and making applications of their own and telling us what we should be doing."

One immediate benefit is that paperwork has been all but eliminated for the engineers, Padron says. Field engineers now file reports electronically by typing into Aetna's custom-developed Mechanized Engineering Reporting System running on 1520 and 1530 laptops from Fremont, Calif.-based Grid Systems Corp.

Custom information

The laptops also hold customized databases, such as one with 400 basic safety recommendations. Information is entered into a template program developed to meet the underwriters' needs, then uploaded via Relay Communications, Inc.'s Relay Gold to several different brands of file servers in one of the 45 corporate offices, where it is accessed by underwriters.

For security reasons, anything sent from the field first goes to the local engineering unit before being forwarded to the LAN.

If engineers are in an Aetna office, they use one of several desks set up with a Grid docking card, which fits in place of the portable's battery. They are then attached to the network and can simply plug in the computer.

Another benefit is that engineers have eased the programming burden. "We have used [engineers] to develop some of the things we were too busy to do here," Padron says.

For example, engineers developed a utility that tracks and analyzes data on the location of accidents. Another program about to be released to Aetna workers is a Loss Control Application, much of which was developed by field engineers.

Despite these benefits, Padron says, Aetna has yet to see the single-digit improvements in productivity it had initially envisioned. "I think we're still going to see the 5% or so increases we expected. Productivity goes beyond quantity — it is also quality and timeliness. We see much more efficient use of time, and the quality of reports has improved significantly," he says. "We can put certain prompts in electronic forms so that the engineer is better guided. The numbers will be coming along." •

Close-up

Organization: Aetna Life and Casualty Co.

Goal: Speed up turnaround time of work between underwriters and field engineers.

Strategy: Give 500 field engineers Grid Systems Corp. portable PCs linked to a corporate Novell, Inc. LAN.

Payoff: Processing time reduced by up to a week.

quick FACTS

The average Fortune 1,000 company is expected to increase its spending on portable and laptop computers by 42% in 1991 to $180,000, according to a poll by the Gallup Organization, Inc.

prompted Travelers to seek an alternative to cabled LANs.

Workers who need ready access to LAN capabilities constantly move in and out of remote sites, which are often leased facilities.

Previously, if those field offices were not cabled, Travelers had to negotiate with building owners for wiring space and then find qualified electricians to pull, terminate and test the cables.

"Much of the gain from a new LAN is getting it in a timely fashion so you can get the return in cash flow, the bottom line," Blazensky says. "If we had to wait five months when we wanted it within one month, that's four months of real bottom-line dollars, in many cases. Once that installation time is gone, you can't recoup it."

Cutting the cable

The big move to wireless started two years ago. In 1989, the company realized that of the 140 new LAN installations planned for 1990, 100 of those would be going into buildings with no cabling.

The expected costs were unacceptable, so Travelers began to look for a technological way out.

Close-up

Organization: The Travelers Corp.

Goal: Speed up LAN installation; reduce costs of ripping out old coaxial cable from leased buildings.

Strategy: Install Token Ring-compatible infrared LANs in high-mobility locations.

Payoffs: Savings of $90 a month per workstation in costs; installation time reduced from between 30 and 150 days to just a few hours.

The three major criteria for the eventual solution were Token Ring compatibility; an equal, preferably favorable, economic comparison with copper; and simple, speedy installation.

Blazensky says Travelers had actually begun to consider alternatives to cabled LANs as early as 1986, including LED and laser-driven LAN technologies. The company rejected those systems because at the time, not only were they not completely IEEE 802.5 compatible, but they also cost up to $30,000 per node pair.

"We looked at some products that used in-house electrical wiring to do some resource sharing," he says. Those systems, however, required extra hardware and software and could not be integrated into a Token Ring network, Blazensky says.

Then, in 1988, Travelers was invited to look at an infrared-based Ethernet system installed at Worcester Polytechnic Institute in Worcester, Mass. The system was the forerunner of BICC Communications' current Infralan.

"When we saw it, we said, 'OK, that's Ethernet-compatible. What can you do for Token Ring?' A few months later, we were presented with a prototype," Blazensky recalls.

To ensure reliability, Blazensky suggested that the developers reconfigure the system from its original "sun satellite" arrangement to a true ring'a optical node-to-optical node design.

Travelers liked what it saw but told the vendor that instead of a "sun satellite" arrangement, it wanted a true ring'a optical node-to-optical node design. In effect, the company wanted the primary path running clockwise and the backup path running counterclockwise.

Thus, any signal interruption would prompt the base units "to do a wrap to the backup path, and everything would stay intact," Blazensky explains.

BICC succeeded in implementing the design. Blazensky says, and the rest was "history."

Improved speed

Travelers says it has not experienced any of the slowness and poor price/performance problems that sometimes hamper spread spectrum, microwave and other wireless LAN technologies.

"In fact, the Infralan goes just a tad faster than the copper equivalent because it takes the actual digital signal and converts it directly to infrared signals with no buffering," Blazensky says. "The direct one-for-one conversion means there is no speed loss."

Travelers is using Infralan at 4M bit/sec. right now and says it expects a 16M bit/sec. system to be available by the end of this year.

Blazensky says he also anticipates future enhancements such as speeds of up to 50M bit/sec. Fiber Distributed Data Interface capability and a 1km version.

The latter is needed "so we can go across public rights of way between buildings," he explains. •

quick

A recent report by The Insight Research Corp. predicts sales of wireless LAN equipment will grow from $79 million in 1991 to $235 million in 1995 — a compound growth rate of 35%.

Wireless vendors include NCR Corp. in Dayton, Ohio; Photonics, Inc. in Campbell, Calif.; Motorola, Inc. in Schaumburg, Ill.; O'Neill Communications, Inc. in Princeton, N.J.; Telesystems SLW, Inc. in Don Mills, Ontario; and Windata, Inc. in Northboro, Mass.

EDI speeds Caterpillar's global march

Worldwide network links 950 big suppliers; expansion onto internal SNA network planned for later this year

BY MEL MANDELL
SPECIAL TO CW

Contrary to its name, Caterpillar, Inc. wants and needs to move faster to beat nimble worldwide rivals, especially Japanese firms.

Peoria, Ill.-based Caterpillar, the world's largest maker of earth-moving equipment, relies on a public, X.25-based electronic data interchange (EDI) network to link its suppliers around the world.

John Nack, manager of Caterpillar's Processing Network Division, says payoffs so far include a $10 million savings in parts inventory and a reduction of 16 accounts payable clerks.

Moreover, Nack adds, documents that previously were rekeyed several times are now entered only once, with far fewer errors.

Integrated EDI is s key part of a huge, worldwide Caterpillar program known as "Extended Enterprise Communications," which encompasses many other technologies.

The objective, according to Nack, a 39-year company veteran, is to make it easier for vendors and customers to do business with the firm.

Today, 950 of Caterpillar's largest suppliers — which deliver more than half of all purchased parts and 80% of documents — are connected via a value-added network (VAN) from General Electric Information Services (GEIS) in Rockville, Md. Data resides on 10 IBM 3090s at Caterpillar's Peoria data center.

In fact, the EDI project has worked so well that Caterpillar will begin offering EDI service on its own IBM Systems Network Architecture (SNA) network later this year, according to Nack.

Just in time

The move into EDI was pushed initially by Robert Dryden, then the company's vice president of purchasing. At his urging, a six-member task force was recruited, including one person from Caterpillar's information systems department, which now has 875 employees.

In 1984, Caterpillar adopted the Japanese-inspired just-in-time manufacturing approach, which depends on fast information exchange with suppliers around the globe. Sixteen of Caterpillar's 36 plants are overseas, and nearly 58% of Caterpillar's sales are generated outside the U.S., so easy communication is key.

Early on, Nack says, Caterpillar faced a major decision: to set up EDI on its own global IBM SNA network or to use a VAN service. "At the time, we had s lot of other alligators in the swamp to contend with," he says, "so we chose to buy rather than make."

Close-up

Organization: Caterpillar, Inc.

Goal: Create fast communications to support just-in-time manufacturing.

Strategy: Link more than 950 suppliers worldwide via an X.25-based EDI network.

Payoff: $10 million in inventory savings, elimination of 16 accounts payable clerks, reduction in rekeying errors.

David Just

Caterpillar's Nack *says EDI has cut the firm's parts inventory by $10 million*

The EDI pilot, involving four of the largest vendors, began only five months after the plan was hatched. GEIS eventually won the contract.

Because Caterpillar wanted standard EDI service, it required GEIS, which offered proprietary EDI, to write code that would translate Caterpillar documents according to the X.12 standards set by the Automotive Industry Action Group, a 700-member suppliers' association of which Caterpillar is a member.

Integration with other information-handling elements was smooth, Nack says, mostly because the company's EDI operates in store-and-forward batch mode and not in real time.

As a result, the translation software to transfer batch files gathered by GEIS to the appropriate mainframe databases was fairly simple and was written by Caterpillar's own programmers.

Global glitches

About the only serious problem encountered was in making some overseas connections. However, dealing with foreign communications protocols was s familiar chore, Nack notes, because some years earlier, Caterpillar had set up a company electronic mail system serving 35,000 locations worldwide.

The first firms connected were Caterpillar's major suppliers. Then came the Herculean task of tying in some 2,100 of the company's smaller suppliers, many of whom Nack says were "computer illiterate." Even though IS dispatched professionals to train suppliers in EDI procedures, most small suppliers still communicate with Caterpillar via postal mail and fax.

quick FACTS

It costs about $100,000 to integrate a single application, such as order entry, into an EDI system, according to Gartner Group, Inc. The job takes about 1,440 hours of custom programming at $50 to $80 an hour, the firm estimates.

In another study, Gartner Group found that Fortune 500 firms justified EDI in different ways: competitive advantage, 46%; not justified, 24%; cost/benefit analysis, 18%; and business necessity, 12%.

Caterpillar gives all trading partners that use EDI the necessary data-entry and communications personal computer-based software, an adaptation of a $2,295 STX12 package from Supplytech, Inc. in Southfield, Mich.

Today, EDI is used to transfer most purchasing documents, including purchase orders, packing lists, shipment releases and invoices. Accounts payable are still settled by mail in check form, however, because no one has asked for electronic fund transfer, Nack explains.

It's difficult to directly credit EDI with financial gain at Caterpillar because global downturns in construction have hurt Caterpillar's and many other companies' earnings, says Karen Uhelhart, an analyst at Shearson Lehman Brothers, Inc., a New York brokerage house.

However, she says, Caterpillar, aided by technology, is holding its own against big Japanese rivals, such as Komatsu Ltd., and should return to profitability later this year.

About that time, Caterpillar plans to move into the second phase of its EDI plans: shifting electronic documents movement to the company's busy SNA network. A pilot program is under way in four locations, Nack says. The switch from public to private network is expected to be completed by late 1992, he says. When it's done, Caterpillar will still rely on VANs to reach remote overseas locations not serviced by the company network.

The added burden on the proprietary network is not likely to require more computer power, Nack says, because the firm's IBM 3090s can handle the extra load. Nack declined to specify how much the project will cost. Caterpillar has already purchased software for its proprietary network from Sterling Software, Inc. •

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Hello to video, goodbye to dog and pony shows

INTEGRATING VIDEO-CONFERENCING

Kmart Corp.

BY MAISIE MCADOO
SPECIAL TO CW

Once a necessary evil, traveling dog and pony shows are history for retailing giant Kmart Corp., thanks to a multimillion dollar investment in videoconferencing technology.

Completed last year, the company's videoconferencing system was integrated into a $55 million, enterprisewide satellite network that links company computers around the country.

The payoff of videoconferencing is twofold, says Walt Badok, senior director of corporate communications and systems reliability. The system cuts travel costs and enables easy, consistent communications between executives at headquarters and staff throughout the country, he says.

"The company used to put three buyers on the road for a month or so, visiting clusters of stores or assembling clusters of managers in Holiday Inns across the country," Badok notes. "Now, we do it in a three-hour broadcast, and everybody in the chain hears precisely the same story."

The year before the video network was installed, Kmart spent $250,000 on travel and hotel costs for its road show. Last year, Badok says, the video broadcast cost $25,000 to produce and transmit.

However, cost alone didn't drive the decision, he adds. Kmart's corporate culture emphasizes close ties between executives at its Troy, Mich., headquarters and retail personnel.

The company's decision to install broadcast video capability between Troy and the 2,250 U.S. Kmart retail stores was based on videoconferencing's ability to enhance corporate communications.

Video an afterthought

Ironically, video was something of an afterthought when Kmart decided to install it on its $55 million X.25 satellite-based packet network back in 1986. The company was searching primarily for a way to streamline data flow. A satellite network — the only option for video broadcast — wasn't even being considered. Data transmission was the main focus.

"We wanted a way to have one pipe that would handle the data requirements for all existing and future systems at the store level," Badok says.

"We thought we would wind up with a terrestrial, CCITT X.25 packet network — kind of a mesh network with the nodes across the country interconnected through high-speed links and corporate locations attached to the network from these nodes," he recalls.

The company received bids for one Systems Network Architecture network, multiple packet networks and several satellite networks that incorporated packet technology. But when it calculated the costs of these options over a 10-year time frame, after taxes, the result was startling: A satellite network would save $80 million to $100 million, even though it was the most untried technology.

No justification needed

Meanwhile, the terrestrial network arena was in a state of flux, with the introduction of fiber optics, the breakup of AT&T and uncertain costs of public switched digital lines.

Kmart reopened bidding only to satellite companies and eventually accepted the bid by GTE Spacenet Corp. (then called GTE Telenet).

"We proposed the network to management as a datacom network — the cost justification was based on data," Badok explains. But in the final two slides of his presentation, he introduced the video option. The next thing he knew, management picked that option, which cost several million dollars, without any more justification than wanting better communications with the field.

GTE Spacenet served as a "semi-network systems integrator," Badok says, stressing that Kmart kept tight control, which included choosing the "amalgam of vendors" that would supply the videoconferencing systems.

Kmart held daily conference calls with GTE Spacenet, overseeing every aspect of the installation "because of the size of the investment and because our careers were on the line," he says half jokingly.

Already, Badok adds, the network has proved its worth, although he hesitates to make a direct correlation between the network and the firm's bottom line. •

McAdoo is a free-lance writer based in Brooklyn, N.Y.

quick FACTS

- *The number of rooms in the U.S. that are equipped for videoconferences has increased from 700 in 1988 to 2,500 in 1990, according to AT&T.*
- *Compression Labs, Inc. in San Jose, Calif., Picturetel Corp. in Peabody, Mass., and Telecom Corp. in Austin, Texas, are the biggest U.S. vendors of videoconferencing systems.*
- *Revenue for vidgomakers jumped by 90% during the last two years to $110 million and will hit $500 million by 1994, says the Wall Street research firm Tucker, Anthony, Inc.*

The sociology of software measurement

You've figured out how and what to measure from a technical standpoint. But have you stopped to gauge staff reaction to a measurement program?

BY CAPERS JONES

Establishing an applied measurement program for software requires sensitivity to cultural and social issues. The normal reaction to a measurement program by both project management and staff is apprehension. Only when it is shown that the data will be used for beneficial purposes rather than punitive purposes will the apprehension subside.

The sociology of measurement implies a need for high-level corporate sponsorship of the measurement program when the program is first begun because the normal reactions of subordinate managers whose projects will actually be measured are dismay, resistance and apprehension.

Normally, either the chief executive officer or an executive vice president would be the overall measurement sponsor and would delegate responsibilities for specific kinds of measures to those lower down in the hierarchy.

In the beginning

Indeed, at such companies as IBM in the 1960s, ITT in the 1970s and Hewlett-Packard Co. in the 1980s, it was the demand for accurate measures from the CEO level that started the corporate measurement programs in the first place.

In a well-designed applied measurement program, staff and management apprehension or opposition is very transitory and lasts for only a month or so prior to start-up, after which the real value of accurate measures makes the system expand spontaneously.

At Hewlett-Packard, for example, a small experiment in software project measurement was so useful and so successful that over a period of several years, it expanded on a voluntary basis into a major international study including virtually all of Hewlett-Packard's software development laboratories.

Indeed, the internal measurements have proved to be so valuable that in 1989, Hewlett-Packard began to offer the same kind of software measurement services to its customers.

John Pirman

What causes the transition from apprehension to enthusiasm is that a well-designed applied measurement program is not used for punitive purposes and will quickly begin to bring chronic problems to the surface in a way that leads to problem solution.

For example, excessive schedule pressures, inadequate office space and insufficient computer turnaround may have been chronic problems for years and yet may have been more or less invisible. But a good measurement program can spot the impact of such problems and quantify the benefits of solving them.

■ The sociology of data confidentiality.

In many companies, corporate politics has such prominence that project managers and some executives will be afraid to submit their data to a corporate measurement group unless that group guarantees the confidentiality of their data. That is, each manager will want to find out personally how his data compares to the corporate or group average but will not want that data distributed to other project groups or to "rival" managers.

Although it is sometimes necessary for reasons of corporate culture to start a measurement program on a confidential basis, the approach is both sociologically and technically unsound.

In a mature and well-managed enterprise, software productivity and quality measurements are normal business tools and should have about the same visibility and the same security classification as corporate financial data.

A branch sales manager, for example, could hardly insist on the confidentiality of the branch's quarterly profit-and-loss data.

Group, divisional and corporate executives should receive productivity and quality reports on all projects and units within their scope of responsibility, just as they receive profit-and-loss reports or normal financial reports.

A well-designed software measurement program will not be a punitive weapon; it will identify all weaknesses that need correction

Continued on page 62

Jones is chairman and founder of Software Productivity Research, Inc. in Burlington, Mass., which specialises in applied software measurement. He has spent the past 20 years exploring computer programmer productivity.

- **Fight dismay, resistance and apprehension**
- **The skills needed for a measurement team**
- **Where to place the measurement group**

Continued from page 61

and point out all strengths that need encouragement.

Another disadvantage of data confidentiality is that it tends to lower the credibility of the measures themselves.

For the first year of ITT's corporate measurement program in 1980, the data was held in confidence. The consequence was that no one really cared about the results. In the second year, when the projects were explicitly identified, acceptance of the measurements as important to managers and executives increased dramatically.

■ The sociology of using data for staff performance targets.

Once a company begins to collect software productivity and quality data, there is a natural tendency to want to use the data to set staff performance targets. That, of course, is one of the reasons for apprehension in the first place.

Leading-edge companies such as IBM and Hewlett-Packard do set performance targets, but for sociological and business reasons, the targets should be set for executives at the director and vice presidential level rather than for the technical staff. Executives are in a much better position to introduce the changes necessary to achieve targets than are technical staff members or first-line managers.

Neither the technical staff nor subordinate managers are authorized to purchase better tools and workstations, stop work and receive necessary education or introduce new practices such as full design and code inspections. Executives, on the other hand, can do all those things.

A secondary reason for establishing executive targets is likely to become more and more important in the future: Corporate officers have a legal and fiduciary duty to achieve professional levels of software quality, and if they do not, both their companies and themselves may find expensive lawsuits and perhaps even consequential damages in their futures.

Perhaps the single event that, more than any other, made IBM a leader in software quality for many years was the establishment in 1973 of numeric quality targets for software executives and the inclusion of those targets in their performance and bonus plans.

Prior to that time, IBM, like many other companies, talked about achieving high quality, but when the pressure of business caused a choice between opting for high quality or skipping something like inspections to try to shorten delivery dates, quality seldom won.

Once IBM's vice presidents and directors had quality goals in their performance plans, however, quality was no longer just being given lip service but became a true corporate incentive.

■ The sociology of measuring one-person projects.

More than half of all software projects in the world are small projects that are carried out by a single programmer or programmer/analyst. This situation requires special handling because it is obvious that all data collected on one-person projects can easily be used for appraisal purposes.

Measuring one-person projects is an especially sensitive issue in Europe, where some countries prohibit the measurement of an individual worker's performance either because of national law, as in Sweden, or because the software staffs are unionized and such measurements may violate union agreements, as in Germany.

The normal solution to this problem in large companies such as IBM and ITT can be one or more of several alternatives. The basic alternative is to establish a cutoff point of perhaps two person-years and simply not measure any project that is smaller. This solution tends to concentrate the measurements on the larger and more costly projects where, indeed, the value of measurement is greatest.

A second solution is to collect one-person project data on a voluntary basis because many programmers are perfectly willing to have their work measured. It is, however, tactful to ask for volunteers.

A third solution, possible only in very large companies, is to aggregate all small, one-person projects and then create an overall set of small-project statistics that does not drop below the division or laboratory level.

Of course, it is also possible to bite the bullet and use one-person project data for appraisal purposes, and some companies indeed do that. It is, however, very likely to lead to morale problems of a significant nature and perhaps even to lawsuits by indignant staff members who may challenge the measurements in court.

■ The sociology of MIS vs. systems software.

Many large high-technology corporations produce both MIS projects and systems software, such as operating systems or telecommunications systems. Some also produce other kinds of software as well: process control, scientific, mathematical analysis and so on.

Generally speaking, the MIS staffs and the systems software staffs have such difficulty communicating and sharing technical ideas that they might as well inhabit different planets.

The dichotomy will affect measurement programs, too, especially because systems software productivity is normally somewhat lower than MIS productivity because of the larger number of tasks performed and the effect of the soft factors.

The natural reaction by the systems software groups to this fact is to assert that systems software is much more complex than MIS applications.

Indeed, many systems software producers have rejected function-based metrics for two reasons: Function points originated in the MIS domain, and MIS projects normally have higher productivity rates. This kind of dispute occurs so often that companies should plan remedial action when beginning their measurement programs.

There are several possible solutions, but the most pragmatic one is to segregate the data along clear-cut lines and to compare MIS projects primarily with other MIS projects and systems software primarily with other systems software.

A more recent solution is to adopt the feature point metric for systems software productivity measures because the built-in assumptions of feature points about algorithmic complexity tend to generate higher totals for systems software than for MIS projects.

Whatever solution a company decides on, the problem of needing to be sensitive to the varying software cultures needs attention right from the start.

■ The sociology of measurement expertise.

The managers and technical staff workers who embark on a successful measurement project are often surprised to find permanent changes in their careers.

There is such a shortage of good numerical information about software projects and such enormous latent demand by corporate executives that once a measurement program is started, the key players may find themselves becoming career measurement specialists.

This phenomenon has affected careers in surprising ways. From informal surveys carried out by Software Productivity Research, Inc. in Burlington, Mass., almost half of the measurement managers are promoted as a result of their work.

About a third of the managers and technical staff workers who start corporate measurement programs work in the measurement area for more than five years thereafter. •

This is an excerpt from Capers Jones' book, Applied Software Measurement: Assuring Productivity and Quality, *published by McGraw-Hill, Inc. in July 1991 (copyright 1991 by Capers Jones).*

The right measurement skills

Most universities and academic institutions have no courses at all in the measurement of software quality, productivity or user satisfaction, so it is seldom possible to hire entry-level personnel with anything like an adequate academic background for the work at hand.

Business schools and MBA programs are also deficient in these topics, so most companies are forced to substitute on-the-job training and industry experience in software management for formal credentials.

Some of the skills available in measurement teams such as those at IBM, AT&T, Du Pont Co., HP and ITT include the following:

- A good knowledge of statistics and multivariate analysis.
- A thorough grounding in literature of software engineering and software project management.
- A knowledge of software planning and estimating methods and the more powerful of the available tools.
- A knowledge of forms design.
- A knowledge of survey design.
- A knowledge of quality control methods, including reviews, walk-throughs, inspections and all standard forms of testing.
- A knowledge of the pros and cons of all software metrics, including the new function-based metrics.
- A knowledge of accounting principles.

The special skills and knowledge needed to build a full measurement program are so scarce in the U.S. that many companies begin their measurement programs by bringing in management consultants who specialize in such tasks. Once the consulting group assists in the start-up phase, the corporate measurement team takes over the future studies and measurements.

How to organize measure unit

Measurement of software productivity, quality and user satisfaction works best with a dedicated staff of professionals, just as cost accounting and financial measurement works best with a dedicated staff of professionals.

Leading-edge companies that recognize this fact will normally establish a corporate measurement focal point under an executive at approximately the level of a director or third-line manager.

This focal point will often report to someone at the level of a vice president, executive vice president or chief information officer. The corporate measurement group will coordinate overall measurement responsibilities and will usually produce the annual productivity report.

As with finance and cost accounting, the larger units and subordinate organizations within the corporation may have their own local measurement departments as well.

The raw data collected from tracking systems, in-depth studies, surveys, interviews and other sources should be validated at the source prior to being sent forward for aggregation and statistical analysis. However, some wrong data always seems to slip by, so the corporate group must ensure that all incoming data is screened and questionable or incorrect information is corrected.

The raw data can either be collected by local personnel on the scene, by traveling data collection specialists from the unit or corporate measurement function or even by outside consultants, if the enterprise is just getting started with measurement.

If the corporation has a formal quality assurance (QA) function, the defect-related data will normally be collected by QA personnel. Quality data can, of course, be reported separately by the QA staff, but it should also be consolidated as part of the overall corporate reporting system.

User satisfaction data from commercial software houses and computer companies is often collected by the sales and marketing organization, unless the company has a human factors organization. Here, too, the data can be reported separately as needed, but it should be consolidated as part of the overall corporate reporting system.

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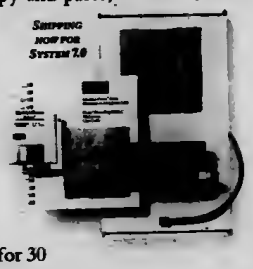

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QUESTIONS TO ANSWERS IN SECONDS.

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Process servers

▶ Digital Equipment Corp. and DEC-dedicated software purveyor Ross Systems, Inc. are far from the only firms in the industry eyeing the process manufacturing market (see story page 72). As Ross readied the announcement of its acquisition of s UK-based process manufacturing software provider, IBM took a minority equity position in Reston, Va.-based Industrial Designs Corp. (Incode). Details of the IBM/Incode deal were not released.

Help for vision-impaired

▶ Panasonic Communications & Systems Co. has donated $250,000 worth of computer scanning equipment to Arkenstone, Inc., s nonprofit organization in Sunnyvale, Calif. Arkenstone will integrate the scanners with other equipment to provide nonprofit social service agencies and schools with reading systems for the blind and visually impaired.

Filing in

▶ One of the latest Chapter 11 filings comes from San Jose, Calif., where International CMOS Technology, Inc. filed for bankruptcy protection recently. The company, which has been in business for six years, makes programmable integrated circuits. It said it will use the filing to restructure its debt and equity structure.

Sign of the times

▶ One announcement we may be seeing the likes of more frequently as 1992 approaches is Haddonfield, N.J.-based Bureau of Translation Services' statement welcoming Jean-Luc Saillard aboard. Saillard has combined his multilingual abilities with his engineering background to become s French translator specializing in computer technology.

Sign of intent

▶ Herndon, Va.-based platform-independent computing products and services vendor C3 is about to pay $42 million in cash to acquire Santa Monica, Calif.-based Telos Corp. The computer software developer and hardware maintenance services provider is no stranger to being bought: It was acquired by current owner GTE as part of GTE's merger with Contel Corp.

U.S. firms leery of South Africa

BY J. A. SAVAGE and JIM NASH
CW STAFF

Despite the removal of federal trade sanctions against South Africa last month, U.S. computer firms — fearing they are more likely to step onto land mines than diamond mines — are not rushing to re-establish business there.

Companies such as AT&T, IBM, Unisys Corp. and Wang Laboratories, Inc., which once sold computers and other equipment directly to South Africa, are not yet ready to reconsider business as usual with that country. Dell Computer Corp. appears to be the only company interested in resurrecting direct business ties.

President Bush recently lifted 1986 U.S. trade sanctions, allowing companies to resume business, engage in new investments and issue new bank loans to the Pretoria government. Exports to South Africa's military police are still banned. Bush said the nation's white government had met several criteria defined by the U.S. — including reversal of the Group Areas Act, which forced all citizens to register their skin color at birth — for lifting sanctions. Blacks are still not permitted to vote, however.

For many companies, business in South Africa is — literally — more trouble than it is worth. On the subject of "worth," spokesmen for several firms said the return on their indirect South African investments represents such a small amount of income that re-establishing direct ties is a questionable expense. A Unisys spokes-

Continued on page 68

Source: University of Georgia

Lack of venture capital deters start-ups

BY NELL MARGOLIS
CW STAFF

Industry observers in search of an upside to the massive computer company layoffs of recent months have noted that the stage seems set for a new crop of entrepreneurial start-ups. The dynamics — hordes of unemployed talent at a time of quantum change — are there. Unfortunately for would-be computer firm founders, venture capital is elsewhere.

The funding alternative that fueled a large proportion of the last decade's technology start-ups will underwrite far fewer of tomorrow's new efforts, according to the institutions that track finance alternatives. In 1990, New York-based market research firm Technologic Partners said, only 26 seed deals were done, for s total investment of $29 million. This underwhelming count, said the firm's president, Richard A. Shaffer, represented s 15% drop in the number of deals and s 52% falloff in dollars invested.

In contrast, even though venture investing as s whole shrank appreciably last year (see chart at right), the $388 million invested in later stage financings marked a 19% increase over the $344 million of venture capital comparably invested in 1989.

Shaffer said venture capital funds are shying away from seeding technology firms for s long list of reasons: wild stock market fluctuations, worldwide economic slowdowns, resulting fiscal conservatism, wrenching changes in every aspect of the computer industry and rampant consolidation of the venture capital industry. They all add up to s heaping portion of the thing "risk-averse venture capitalists" like the least: uncertainty.

"A venture capitalist's most critical resource is time, and seed financings take s lot of it," said Ray Rothrock, an associate at Venrock in New York. If you add up all the other risks that cloud the investor's chances of realizing on s start-up investment and factor in the low probability of seeing that return near-term, he said, "seeds are fairly hard to justify."

And it is not getting better. Shaffer, who several months ago speculated that 1990 would be recalled as "the year the Great American Venture Capital Machine began to slow down," reported an early 1991 uptick in technology-directed venture spending — except for seeds.

Sparked by unexpected rallies in the public markets and particularly by s stampede of computer firms' making initial public offerings, venture deals in general picked up notably in the first quarter, he said.

However, Technologic Partners tracked only six seed deals, totaling $3.1 million, between Jan. 1 and March 31 — "the lowest quarterly total we've seen in at least three years for this earliest stage of venture investing," Shaffer said.

Ten largest venture capital investments Q1 1991 (in millions)

Comp USA	$28.0
Central Point Software, Inc.	$15.0
Transit Comm. Atlantic	$11.5
Microchip	$10.5
Frame Technology Corp.	$10.0
Applied Digital Access	$7.7
Microwave M&D	$7.2
Spectralink	$7.0
Cellular Data	$6.8
Synernetics	$6.4

Ten highest valuations

Central Point Software	$100.0
Comp USA	$75.0
Frame Technology	$55.0
DSI Network Systems	$41.0
Everest Systems, Inc.	$35.4
Unify	$30.9
Spectra	$28.3
Microwave M&D	$27.1
Fyda	$25.4
Spectralink	$21.5

Note: These results are based on a survey. The valuations of some companies were unavailable and, in a few cases, so was the amount of the investments.

Source: Technologic Partners CW Chart: Janell Genovese

Number of seed financings As percent of total deals	25 7.3%	34 7.3%	28* 6.2%
Number of first-round financings As percent of total deals	61 17.9%	75 16.2%	92 20.3%
Number of later-stage financings** As percent of total deals	80 23.5%	140 30.2%	136 30.0%
Number of financings in survey	341	464	453

Source: Technologic Partners CW Chart: Janell Genovese

DIGITAL'S LONG LINE OF AWARD-WINNING TERMINALS JUST GOT EXTENDED

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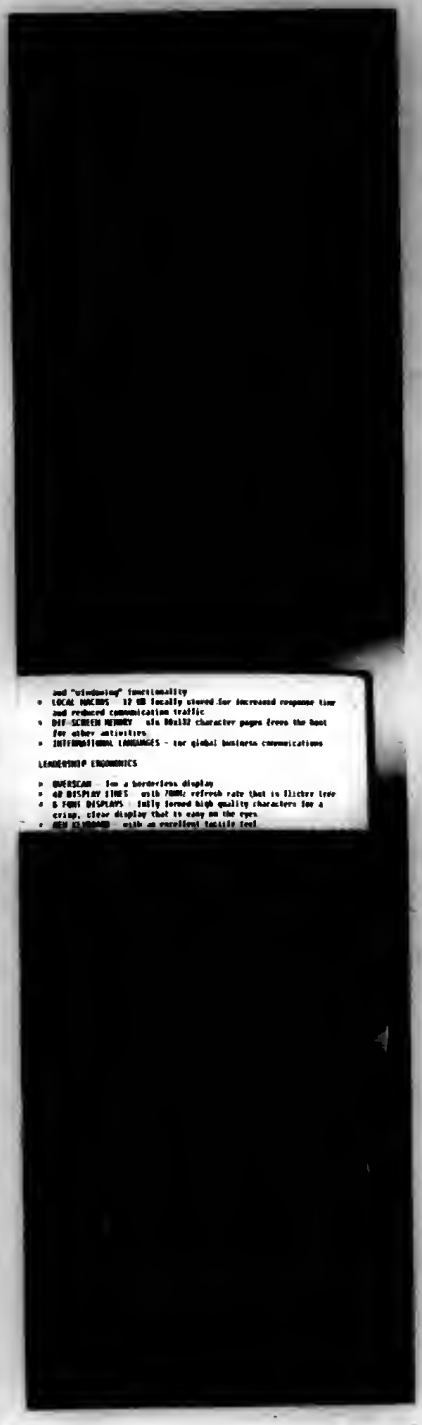

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EXECUTIVE CORNER

Versyss names Wardell president, COO

Versyss, Inc., a Westwood, Mass.-based supplier of computer hardware, software and services to small and midsize companies, recently named Thomas Wardell to the position of president and chief operating officer. Wardell, who is one of the three founding partners of Versyss and who previously served as executive vice president, will assume the responsibilities formerly held by **David O. Keene**, who will remain chairman and chief executive officer of the firm.

Retix Corp., a Santa Monica, Calif.-based supplier of Open Systems Interconnect products worldwide, recently appointed its president and CEO, **Steve Frankel**, to the additional position of chairman of the board. Frankel succeeds **Andrew De Mari**, former chairman and CEO of Retix and a founder of the firm.

New York-based telecommunications specialist World Communications, Inc. has appointed **David Hardwick** as managing director of its UK operations, known as **Worldcom International Ltd.** Hardwick was general manager of customer systems at **British Telecom**.

Sequoia Systems, Inc. announced last month the resignation of its COO, **Michael Bruce**, who leaves the Marlboro, Mass.-based fault-tolerant computer vendor to pursue outside interests.

South Africa

CONTINUED FROM PAGE 65

man, for example, said the company has more economically pressing issues to handle in the U.S. Unisys sold its South African subsidiary to a South African firm in 1988. It claimed that the subsidiary accounted for approximately 1% of its revenue at the time.

IBM, which currently has indirect ties through a former subsidiary sold to a trust controlled by South African interests, receives less than 1% of its income from business done through the trust.

If the spoils of doing business in South Africa have been meager, the problems have proved major. In addition to the federal sanctions, a steady stream of protest from consumers and stockholders who have ethical objections to supporting the South African government has worn the shine off of an investment that was not financially gleaming to begin with.

Activists claim that even when federal sanctions were extant, companies found them easy to circumvent. "New affirmative-action moves could exempt a company," said Jerry Herman, Southern African-program coordinator for the American Friends Service Committee in Philadelphia. "For instance, adding a certain number of blacks to your board could get a company around the no-new-investment provision."

For companies that have grown tired of battling obstacles to claim a questionable reward, Washington's new view may not change the scenario appreciably. Although federal prohibitions are gone, companies still face a gamut of U.S. local and state sanctions. There is little sign that those will be rescinded. To the contrary, Herman said that recent revelations of secret South African government funding of the Inkatha Freedom Party — the primary native opponent to the African National Congress — could fuel more vigorous enforcement of the remaining laws.

Local sanctions have already affected computer companies. In October 1990, Dell stopped doing business through Incorporated Data Systems, a black-owned South African company, when the state of Michigan, the county of Los Angeles and the city of Pasadena, Calif., canceled their accounts with the personal computer vendor on grounds of the South African link. "Since then, we've been actively pursuing ways of doing business in accordance with state and local government restrictions," a spokeswoman said.

Despite the lack of enthusiasm for immediate resumption of full-scale South Africa operations, however, some computer companies have not entirely written the option out of their agendas. Wang and AT&T, for instance, are monitoring the political situation for future moves.

"Our presumption is that there is no need to resume business. At the same time, there's no denying that progress has been made in South Africa," an AT&T spokesman said.

"There are a number of significant and encouraging changes in South Africa, which we are watching closely," a Wang spokesman stated. Wang was found to be exporting to South Africa through a Florida firm in 1985 and 1986, despite a public claim that it had severed all ties to the country. Its current corporate policy forbids both exporting and selling to other companies that export to South Africa.


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Ross Systems buys into process manufacturing

Acquisition of UK-based Pioneer Computer propels firm into a potentially rich new market

BY NELL MARGOLIS
CW STAFF

REDWOOD CITY, Calif. — Ross Systems, Inc.'s acquisition of UK-based Pioneer Computer Group Ltd. early this month advanced the business software vendor's expansion strategy on two key fronts.

Geographically, the $8.3 million stock swap gives Ross Systems a foothold in Europe.

Technologically, it vaults Ross Systems into the promising and thus far underpopulated process manufacturing software market.

Process manufacturers are looking to integrate control and process information with business and manufacturing planning functions, said Ross Systems Chief Executive Officer Dennis Vohs. Their search will fuel the process manufacturing software and services business to an estimated $4.7 billion by 1992, according to Mountain View, Calif.-based market research firm Input.

Pioneer's Promix line, a targeted process manufacturing application series, is widely used among the company's 300 customers. The product line is concentrated in the UK, New Zealand and Australia, but it is a newcomer to the U.S.

Exclusively DEC

The chance to wed a ready supply to a growing demand might reasonably attract many an expansion-minded firm. For Ross Systems, however, privately owned Pioneer, which Vohs said Ross Systems was able to pick up at "a reasonable price" in the recession-battered UK market, has added appeal: Like its buyer, the British firm designs and markets software exclusively for the Digital Equipment Corp. platform. Both Promix and Pioneer's Gembase relational fourth-generation language are specifically tailored to take advantage of DEC's VAX and RDB, its relational database.

The Pioneer deal, which is expected to close by the end of this month, is Ross Systems' third acquisition in the two years since it announced its intention to cut a swath across the DEC applications software market by acquisition as well as by internal development.

In 1989, Ross Systems bought distribution software provider Cardinal Data; in 1990, it added Argonaut Information Systems, which offers a suite of human resources applications.

INTERNATIONAL BRIEFS

Compaq attack

▶ **Compaq Computer Corp.**'s recently established Japanese subsidiary, **Compaq K.K.**, will begin to market its parent's products in Japan during the first half of 1992, Compaq announced earlier this month. The machines reportedly will incorporate dominant world standards and, therefore, will be IBM-compatible. Analysts said they view the move as part of a multifaceted Compaq attack on Japan's **NEC Corp.**, which has stocked approximately half of the Japanese personal computer market with non-IBM-compatible computers.

ICL takes Soviet bet

▶ **International Computers Ltd. (ICL)** has established a joint venture with Soviet mainframe manufacturer **Kazan Manufacturing Enterprise of Computer Systems** to market British-made computers in the Soviet Union. ICL reportedly has committed $1.7 million to capitalize the 100-employee venture, in which it will take a 60% stake.

Unix fix

▶ The way to a German employer's payroll these days is more likely to lie in Unix know-how than in abilities with MS-DOS, OS/2 or MVS, according to the **Control Data Institute**. Control Data, which studies job placement ads to assess demand, evaluated four German newspapers. Among its findings were a fall in information systems job placement ads — the first in four years — a rise in demand for Unix and a broad hint that data processing specialists who want work in Germany should be familiar with at least two programming languages, preferably Cobol and C.

Buys in Britain

▶ Ottawa-based systems integration firm **SHL Systemhouse, Inc.** last week expanded its UK systems integration base with the acquisition of Camberly, Surrey-based network integrator **Computer Marketing PLC**. The purchase of the $60 million, 120-employee firm for an undisclosed sum is Systemhouse's second UK buy. It is also recently appointed Chief Executive Officer **John Oltman**'s first marker on the European expansion trail he has stated will be an earmark of his administration.

Background in finance buying IS advancement

BY JULIA KING
SPECIAL TO CW

In 1985, former controller Dave Barany was quietly minding the debits and credits of Chicago-based Household International, Inc. when he was "drafted" to pinch-hit for the financial service company's departing senior vice president of technology.

"They wanted someone to watch the shop for six months until they could find a replacement," Barany recalls.

What was then a temporary assignment has evolved into a new career for Barany, who was appointed Household's corporate vice president and chief information officer 5½ years ago.

Barany is just one of a growing number of professionals landing top information systems slots, thanks to academic credentials and on-the-job experience in corporate finance. These promotions demonstrate that a strong financial background coupled with a well-grounded understanding of a company's way of doing business often take precedence over technical skills.

To understand this shift, one need only consider the kinds of decisions facing today's IS executives. Issues such as outsourcing, re-engineering and downsizing all have huge financial implications. Increasingly, it is these dollars-and-cents implications — rather than bits and bytes — that are of paramount concern to senior management.

"IS executives have to know how to do more with less," says Benjamin Porter, a director at DMR Group, Inc., a Boston firm that specializes in measuring the value of IS investments. "There are fewer financial resources available to be spent on technology, so a financial background is absolutely critical for IS managers."

Add to this the growing number of technologically sophisticated company presidents and chief executive officers, Porter says, and it becomes virtually impossible for IS executives to function in their jobs without a firm base of financial knowledge.

"It used to be that the IS community could fend off senior management's requests for hard numbers about IS investments through technology subterfuge. IS managers would say they couldn't predict or estimate costs and benefits," Porter notes. "Now, by contrast, senior management, which is becoming increasingly computer literate, is demanding the same kind of rigorous financial accountability from IS organizations as it does from all other departments."

At Lucas Aerospace, Inc. in Cleveland, IS director Eric Hollenbach confirms this trend. Hollenbach's original IS budget of $3.5 million has already been returned to him twice, the last time with directions to pare it by another $600,000, and bring it in at an even $2 million.

"Every project I do is scrutinized, and there's a need to present tangible dollars-and-cents benefits — not soft, subjective benefits such as improved productivity," Hollenbach says. "The pressure is there to understand the value of IS and to justify it."

While the IS community generally agrees that IS executives must possess financial acumen, one point they differ on is how to go about acquiring the expertise crucial to a company's success.

Barany, a college economics graduate and a certified public accountant, had no background in technology when he assumed his current post. In the months immediately following his appointment, he says, he was a "professional seminar attender, reading and devouring everything he could about technology." Barany says he believes that it's a lot easier learning about technology than going back to pick up a financial background.

Frank Diaz, president of Chicago-based Kemper Service Co., the systems arm of Kemper Financial Services, Inc., is also a self-educated technologist. A banker by training, Diaz got into the IS business on a dare.

"As a banker, people in the DP department were always telling me they couldn't do things when I thought they could. Finally, they said, 'If you think you're so good at this, why don't you do it yourself?' "

Now at Kemper's IS division for almost 10 years, Diaz maintains that the key to an IS executive's success lies in recognizing the relationships between IS and finance. "Because you are making capital expenditure decisions, you have to look at the life span of equipment, the impact on the balance sheet and whether you are better off leasing or buying," Diaz says.

Another way to acquire financial perspective is to rotate either through various departments of a firm or through different firms within the same industry, as did Sidney Diamond, vice president of worldwide information services at Black & Decker Corp. in Towson, Md.

Diamond, who holds degrees in accounting, marketing and business, began his career more than 20 years ago in marketing and product planning positions in the pharmaceutical industry. From there, he moved over to IS, eventually serving as IS director of the international group at Bristol-Myers Co. From Bristol-Myers, he was recruited three years ago to Black & Decker, which, like the pharmaceutical companies he worked for previously, is in the consumer goods business.

But overall, Diamond says, "There's no need to major in finance. What you must have is an understanding of return on investment and cash flow to help present your ideas."

> A STRONG FINANCIAL background coupled with a well-grounded understanding of a company's way of doing business often take precedence over technical skills.

Few, if any, companies strictly require that a senior IS executive hold a formal degree in either finance or computer science, according to Gary LaFave, manager of IS recruitment at Winter, Wyman & Co. in Boston.

However, during interviews, senior executives can expect to be quizzed on what savings they have put in place in the past, how they intend to track IS costs and how they will prepare IS budgets.

King is a free-lance technology writer based in Ridley Park, Pa.

Sharpen skills before you leap

Fast Track is a twice-monthly column dedicated to answering questions on career directions.

BY MAX MESSMER
SPECIAL TO CW

Q I have a bachelor of arts degree in marketing and communications and have been employed for five years in a small supermarket chain in a point-of-sale function. How can I transfer my skills out of the retail area into an information systems department at a large firm?

W. B.
Torrington, Conn.

A If you want to move into a corporate environment, your best bet is to start developing the skills that are in demand there, mainly word processing, desktop publishing and office automation. If training is not available from your company, investigate the courses in your community at local junior colleges and vocational schools.

Q I'm Korean and do not have a green card. I'd like to find an employer in the U.S. that will sponsor me. I speak English, French, Korean, Japanese and Chinese. I can handle financial analysis as well as IS-related work. Any suggestions?

Initials and town withheld

A People with a broad range of language skills are in high demand as companies expand internationally. Your problem is that few recruiting budgets can afford to bring candidates from overseas for interviews.

The best place to start is with multinational companies and consultants with operations in both the U.S. and Korea. Once you prove yourself to be a valued employee, you'll have the best chance of successfully transferring to your location of choice.

FAST TRACK
CAREER ADVICE FOR THE '90s

Q I am employed by the U.S. Department of Defense and have a master's degree in computer information systems. I'd like to make a transition to software engineering or IS management at an international company. What's the best plan of action?

W. C.
APO New York

A Changing your location, your industry or your specialty can be difficult. It's often best to approach major change in a series of steps, perhaps changing specialties first, then getting to the right location and then changing industries as opportunity arises.

Since there's a still a large DOD presence in much of the world, you might first consider a transfer within the DOD in a position similar to ones you seek in the private sector.

Q I am a seven-year veteran of IS with a master's degree in artificial intelligence. I seem to have a problem in selling IS ideas, such as cost-benefit proposals, to my supervisors. What kind of position can I get where I'll be given the chance to cost-justify an idea?

G. H.
Annandale, Va.

A If you're not being recognized as a problem solver, you may not be presenting your ideas properly. It's much easier to sell your ideas when you can articulate the costs and benefits at the same time. The next time you identify a problem and a possible solution, spend some of your own time working through the options, costs, risks and benefits. When you propose the idea, present the rationale behind your suggestion and the results you expect to achieve.

If you do decide to move on, be clear in your interviews that you are seeking a position where you can be involved in problem solving and carrying out solutions.

Messmer is chairman of Robert Half International, Inc.

We welcome your questions. Send them to Cathy Duffy, Careers Fast Track, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701, or fax them to (508) 875-8931. Letters may be edited for brevity and clarity. Your initials and town will be printed unless you request otherwise.

JOB SNAPSHOT

Ada programmers

Job Snapshot is a monthly column identifying key attributes of information systems career positions.

▶ **JOB REQUIREMENTS:** Ada employers — largely found in Department of Defense divisions — want as much technical depth and recent experience as they can get. In many ways, they are looking for the same skills that define good programmers in general: Ada programmers need to be both methodical and able to step back and abstract the essence of a problem so that programs can be reused in other applications. More specifically, employers want knowledge of object-oriented methodologies, current tool sets, cost-estimation models and documentation standards for large-scale complex systems.

▶ **CAREER PLUSES:** Those involved in the Ada field maintain there's a much greater sense of accomplishment to programming in Ada than in other languages because of the richness of the language: An Ada programmer can come back after six months and understand what's been written. Programmers also tend to gain a better knowledge of software engineering with Ada than with other languages. Reportedly, most programmers who switch to Ada don't want to go back to any other language.

▶ **CAREER MINUSES:** The commercial community has been slow to adopt Ada, so if DOD projects are stalled or canceled, the job opportunities could quickly shrink. The Ada community to date has not been very successful in promoting its image: Its support in universities, while growing, has been minimal, and there is still a perception that those working in Ada are all building weapons systems.

▶ **BEST JOB OPPORTUNITIES:** Ada programmers will have the best luck in regions of the country that have concentrated areas of Ada employers (a mix of DOD and commercial), such as Washington, D.C., and California, followed by the Southwest and the Northeast. Jobs with the government may mean better security and benefits but also more regimentation and less prestige and money. Non-DOD choices include the following: NASA and the Federal Aviation Administration, both with new projects starting up; Motorola, Inc. (in cellular phones); Xerox Corp. (in embedded software for copiers); Shell Oil Co.; and Wells Fargo & Co.

Researched and written by Kathleen Gow, a free-lance writer based in Medford, Mass.

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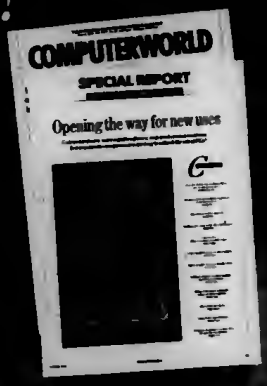

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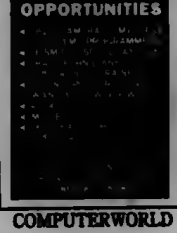

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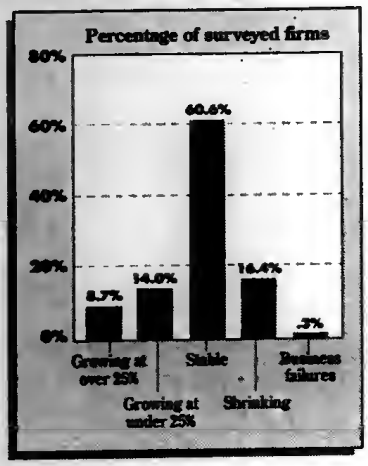

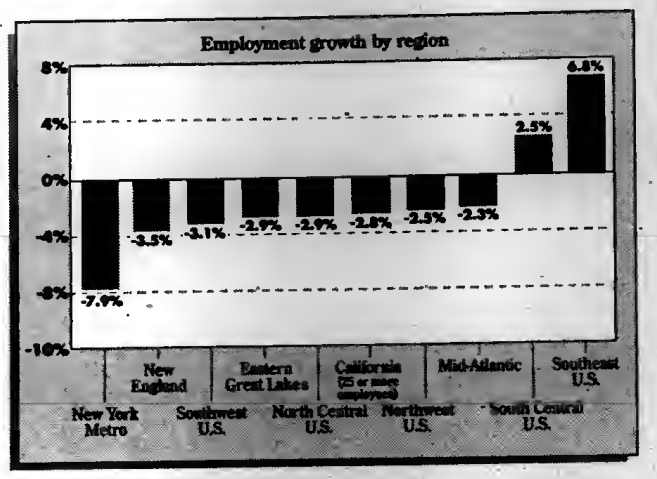

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Leasing lesson: Think 'future'

Be sure to review leases periodically and check for flexibility factor

BY SUZANNE WEIXEL
SPECIAL TO CW

If information systems managers had crystal balls, leasing computer systems would be easy.

They could forecast precisely which equipment they would need two years down the road, which applications they would be running, how many people they would be supporting and where they would be located. Then they could write a leasing contract with clauses for every addition and upgrade.

Unfortunately, without such magic, IS professionals are forced to rely on good planning and flexible leasing contracts.

A lease is a legal document, not something you can sign today and back out of in a year if your needs change, says Thomas J. Donovan, director of Technology Investment Strategies Inc., a consulting firm in Framingham, Mass. Building in as much flexibility as possible up front is the surest way to mitigate problems when changes do occur, Donovan advises. Also, knowing what is in the contract and reviewing it frequently should be part of every business's planning, he says.

Eric Hollenbach, director of MIS at Lucas Aerospace Corp. in Cleveland, says he is frustrated by the six-month termination notice required by his leasing contract. He must decide whether to upgrade communications controllers and pay an early termination penalty or provide the notice and postpone the upgrade.

Hollenbach admits that if he had been more familiar with the specific terms of the contract or had reviewed it more regularly, he might not be in this position. He says he hopes in the future to keep the cancellation notice to no more than 30 days.

Less obvious changes should also prompt a contract review, Donovan says. For instance, if the data center is going to be relocated, the lease should be reviewed. Some leases have clauses that nullify the contract or charge penalties if the equipment is housed anywhere other than at the original address.

If there is a change in personnel at the executive level in information services, the new manager should immediately familiarize himself with the terms of the lease. Donovan claims he knows of companies where new management has come in and sold off systems, never even knowing that they were leased.

Look over the lease

With most leasing contracts requiring anywhere from 30 to 120 days' notice for changes or cancellations, the safest review policy would be every six months.

Penalties for missing a notification date range from preset penalty fees to a change in rates. At the end of the term of the lease, if a company fails to notify the lessor that the lease will be either extended or terminated, the lessor will probably assume an extension for an additional term. "If you're not careful, you'll end up in a new lease for another term without having the chance to renegotiate," Donovan says.

Continual is the word Henry Weber, vice president of Schwarz Paper Co. in Morton Grove, Ill., uses to describe his contract review procedure. He says the company's operations manager knows the lease inside and out, and every quarter, changes are made to make sure the contract fits the company's business plan.

"We may be upgrading units, we may be swapping peripherals, but there is always something to adjust," Weber says.

Many times, IS departments assume that someone else, either a finance department or a legal department, is monitoring the contract. Although it is important that both of those areas be involved in the lease arrangement, IS professionals should realize that those departments will most likely focus on costs and legality. It is up to IS to look out for the technology.

Weixel is a free-lance writer based in Framingham, Mass.

Contract clarity

A paperweight on the desk of Edward Barrows, director of the corporate data center at Occidental Petroleum Corp. in Tulsa, Okla., states: If it isn't in the lease, it's not in the deal.

That's a warning IS directors would do well to heed when it comes to leasing computer systems. Here are some of the key terms and conditions to watch for in leasing contracts:

- Term, or length, of the contract.
- How much notice must be given to terminate the contract.
- Changes in leasing rates.
- What events might trigger a change in rates.
- The dollar amount of penalties for early termination.
- Option to substitute like-for-like parts.
- Option to upgrade equipment.
- How much notice must be given before changing equipment.
- The dollar amount of penalties for changing equipment.
- Restrictions on the manufacturers of parts or equipment.
- The option to sublease equipment.
- The option to move equipment if the leasee changes locations.
- The ability to lock in a lease rate for future purchases.

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AT Model 099	$600	$675	$500
AT Model 239	$625	$725	$600
AT Model 339	$775	$1,000	$700
PS/2 Model 30-286	$1,150	$1,300	$1,000
PS/2 Model 60	$1,150	$1,500	$1,000
PS/2 Model 70P	$3,400	$3,600	$3,200
Compaq Portable II	$700	$1,050	$700
Portable 286	$1,100	$1,300	$1,000
SLT 286	$1,700	$1,900	$1,550
Portable 286	$1,900	$2,100	$1,500
LTE 286	$1,800	$1,900	$1,600
Deskpro 286	$800	$1,000	$700
Deskpro 386/20	$2,150	$3,000	$3,000
Apple Macintosh Plus	$750	$975	$700
SE	$1,100	$1,250	$1,050
IIX	$3,550	$3,600	$3,500
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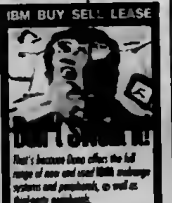

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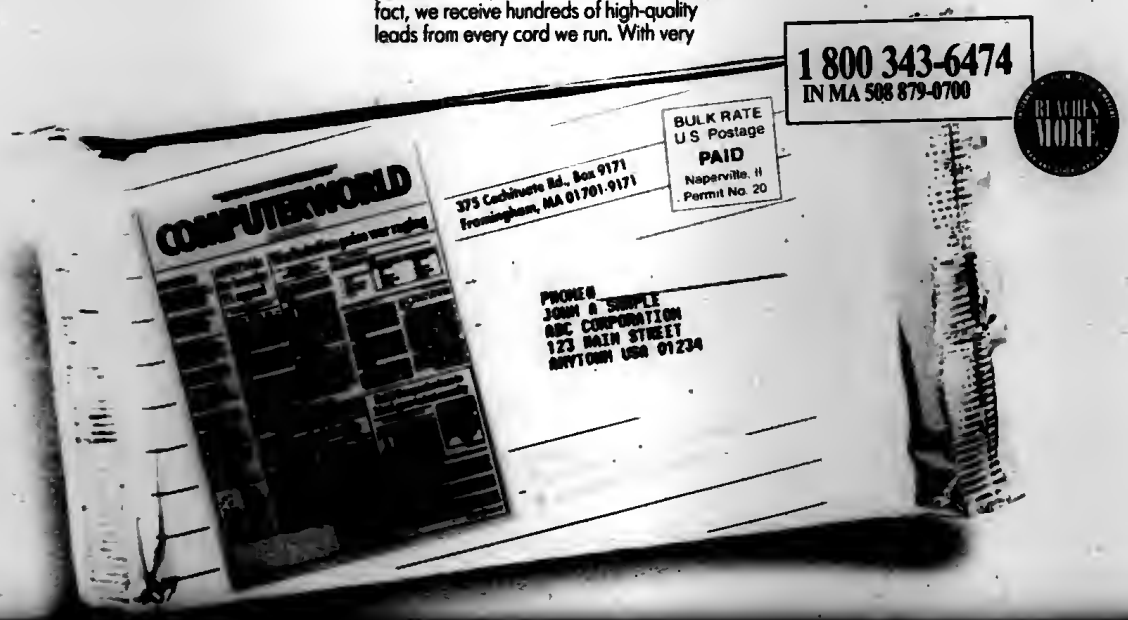

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INDUSTRY ALMANAC

RECOMMENDATION CHANGES

DOWNGRADED FROM HOLD TO SELL: Mips Computer Systems, Inc. (Prudential Securities, Inc.). Company has taken a necessary first step in a financial overhaul by announcing a restructuring charge along with its recent quarterly earnings; earnings will be weak for several quarters.

DOWNGRADED FROM STRONG BUY TO BUY: Convex Computer Corp. (Alex. Brown & Sons, Inc.). Transition from C2 to new C3 series supercomputers is taking longer than anticipated, which has cut into expected sales; next quarter will likely be a loss. However, Convex has overcome the technical deficiency issues it once faced and now must only secure enough BiCMOS and gallium arsenide parts to ramp up production.

UPGRADED FROM BUY TO STRONG BUY: Picturetel Corp. (Alex. Brown). Company's 41% leap in quarterly sales proves the videoconferencing market is quite attractive. Picturetel's market share capture strategy and low prices will continue to stimulate demand into 1992; just announced low-end products should do especially well.

UPGRADED FROM OUTPERFORM TO BUY: Xilinx, Inc. (Shearson Lehman Brothers, Inc.). Chip stocks are on the verge of a big rally, and Xilinx should be a core holding. While other semiconductor makers specialise — and are therefore more at risk in a down market — Xilinx sells programmable gate arrays, which are essentially blank chips that other companies customize. Xinlinx stock currently trades in the mid-20s but could soom to 35 within 18 months.

UPGRADED FROM MARKET PERFORMER TO OUTPERFORM: Octel Communications Corp. (Montgomery Securities). Fiscal fourth-quarter sales surpassed estimates, driven by well-planned year-end promotions for computer equipment and strong sales in Octel's telephone equipment division. A new voice-mail utility, which incorporates interactive voice response, fax and electronic mail functions, generated much customer interest and should bring in significant revenue in fiscal 1992.

GUEST SPEAKER

Jeff Canin, analyst at Montgomery Securities in San Francisco, on Sun Microsystems, Inc.:

Note: Sun reported fiscal fourth-quarter sales of $942.5 million, up 35% from $700 million for the corresponding period last year; net income for the quarter also increased 35%, to $66.4 million from $49 million.

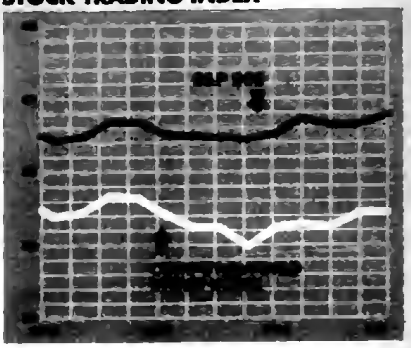
"Sun's financials beat our estimates slightly. The most pleasant surprise was that gross margins improved on those posted in the prior two quarters.

"[The company] stated that the seasonality of the computer business might take a toll in the next quarter. I think the going might get a little tough if Hewlett-Packard Co. and other competitors lower prices on their RISC machines. But it's hard for me to envision [Sun] losing its No. 1 position in the workstation market anytime soon.

"Sun has a bulletproof balance sheet. We currently rate the stock a 'buy.' We are cautious right now, though, and might lower it to 'neutral' if the stock really runs up after these good financial results come out. That reduction would be purely a matter of valuation and not a reflection on the company itself."

KIM S. NASH

STOCK TRADING INDEX



THIS WEEK'S HIGHLIGHTS

- Avantek, Inc. stock more than doubled last week after rumors of its impending absorption by Hewlett-Packard Co. spread. Avantek soared 2 7/16 points to close Thursday at 4 7/16, while HP dropped 1¼ points to 53¼. Storage Technology Corp. announced plans to acquire XL/Datacomp, Inc.; Storage Tek slipped ⅜ of a point to 47⅛, while its potential acquiree gained 1⅛ to 12⅛.
- Apple Computer, Inc., which hosted a trade show in Boston last week, rose 1⅝ points to 50½. Adobe Systems, Inc., a large maker of software for Apple machines, gained 2⅝ points to 57¾.
- Unisys Corp. stock traded heavily late in the week, rising ⅝ of a point to 4¾. The company said it received U.S. Navy contracts worth $100 million.
- Microsoft Corp. gained big among software issues, leaping 5¾ points to 79. Borland International, Inc. advanced 3⅝ points last week to 50. The gain came after two consecutive weekly losses.

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, AUGUST 9, 1991

TOP PERCENT GAINERS	
Gandalf Technologies Inc.	26.32
Unisys Corp.	20.00
Oracle Systems	10.81
Microsoft Corp.	10.24
Computer Automation Inc.	10.00

TOP PERCENT LOSERS	
American Software Inc.	-16.67
VLSI Technology	-17.46
Connections Int'l	-17.24
Masstor Systems	-16.67
Selectarm Inc.	-13.50

TOP DOLLAR GAINERS	
Microsoft Corp.	7.80
Autodesk Inc.	3.25
Adobe Systems Inc.	3.25
Stratus Computer Inc.	3.50
Dell Computer Corp.	2.13

TOP DOLLAR LOSERS	
Digital Equipment Corp.	-4.30
Matsushita Electronics	-4.00
Hewlett Packard Co.	-9.00
Storage Technology	-2.75
Commodore Int'l	-2.50

Exch	52-Week High	52-Week Low		Aug. 9 Close	Wk Net Change	Wk Pct Change
Communications and Network Services					Up 0.48	
OTC	14.88	5.38	3 COM Corp.	7.38	-0.25	-3.28
NYS	68.75	52.50	American Info Techs Corp.	53.13	-0.25	-0.41
NYS	40.88	30.00	AT&T	38.50	-0.38	-0.94
OTC	4.13	0.88	Ariel Communication Corp.	2.00	0.13	6.67
NYS	60.50	39.50	Bell Atlantic Corp.	47.63	0.38	0.75
NYS	69.25	48.25	Bellsouth Corp.	46.88	-1.25	-2.60
NYS	17.88	13.25	Cabletron Systems	17.88	1.75	9.84
OTC	25.88	8.25	Compression Labs Inc.	20.25	1.63	8.72
OTC	5.13	2.44	Data Switch Corp.	2.50	-0.13	-4.88
NYS	21.50	9.88	Digital Comm. Assoc.	13.13	-0.50	-3.67
NYS	25.25	12.25	Dynatech Corp.	17.25	-1.75	-9.21
OTC	12.38	6.00	Fibronix Int'l Inc.	6.38	0.00	0.00
OTC	3.75	1.75	Gandalf Technologies Inc.	3.00	0.63	26.32
NYS	3.60	1.63	General Datacomm Inds.	2.63	0.00	0.00
NYS	30.50	23.75	GTE Corp.	29.75	0.25	0.85
NYS	63.00	40.25	ITT Corp.	58.75	0.75	1.27
OTC	37.00	17.88	MCI Communications Corp.	29.13	0.88	1.80
OTC	8.25	2.75	Microcom Inc.	7.25	-0.50	-6.45
NYS	11.63	4.00	Network Equipment Tech.	11.63	0.88	8.14
OTC	18.25	4.00	Network General	8.25	-0.50	-5.71
OTC	16.38	8.13	Network Systems Corp.	16.38	1.38	9.17
NYS	38.88	22.13	Northern Telecom Ltd.	37.50	-0.88	-2.29
OTC	60.88	17.25	Novell Inc.	50.88	2.13	3.62
NYS	77.88	57.50	Wyrex Corp.	73.50	-0.50	-0.68
NYS	47.50	36.25	Pacific Telesis Group	42.38	0.00	0.59
OTC	11.63	3.50	Perrit Data Comm. Rivets.	7.88	-0.13	-1.56
NYS	24.50	8.88	Scientific Atlanta Inc.	14.00	-0.25	-1.75
NYS	57.88	47.25	Southwestern Bell Corp.	55.00	0.75	1.38
NYS	31.50	20.63	United Telecom	26.38	-0.50	-1.86
NYS	40.75	32.88	US West Inc.	36.25	0.00	0.00
Computer Systems					Up 0.07	
OTC	3.50	0.88	Alliant Computer Sys.	0.88	0.00	0.00
ASE	17.88	10.50	Amdahl Corp.	14.00	-0.38	-2.61
OTC	73.25	24.25	Apple Computer Inc.	50.75	0.75	1.50
OTC	10.00	3.50	Archive Corp.	4.13	-0.13	-2.94
OTC	32.75	7.50	AST Research Inc.	27.88	1.88	7.21
NYS	6.38	4.00	Bolt, Beranek & Newman	7.25	0.13	1.75
NYS	21.63	4.50	Commodore Int'l	12.00	-0.50	-17.24
NYS	74.25	69.88	Compaq Computer Corp.	35.00	-1.25	-3.45
OTC	2.13	0.13	Computer Automation Inc.	1.88	0.13	10.00
NYS	14.38	8.75	Control Data Corp.	8.88	0.50	6.33
NYS	11.88	6.88	Convex Computer	10.50	-0.13	-1.18
NYS	44.63	20.20	Cray Research Inc.	40.00	0.88	1.27
NYS	18.88	3.50	Data General Corp.	17.88	0.88	5.26
NYS	3.25	0.75	Datapoint Corp.	1.38	-0.13	-9.33
OTC	32.25	8.25	Dell Computer Corp.	32.25	2.13	7.08
NYS	93.00	63.50	Digital Equipment Corp.	64.88	-4.63	-6.66
NYS	28.88	13.75	Harris Corp.	24.00	-2.50	-9.43
NYS	58.20	24.88	Hewlett Packard Co.	53.50	-9.00	-5.31
NYS	169.75	96.20	IBM	98.88	-1.38	-1.37
OTC	12.00	7.75	Information Int'l	8.25	-0.50	-5.13
OTC	31.50	10.50	Intergraph	21.25	-1.00	-4.49
NYS	2.25	0.44	MAI Systems Corp.	0.47	-0.03	-6.26
NYS	149.00	114.00	Matsushita Electronics	121.00	-4.00	-3.20
OTC	19.00	8.50	Mentor Graphics Corp.	13.50	-0.88	-6.10
NYS	109.30	44.80	NCR Corp.	108.50	-0.88	-0.34
OTC	69.50	10.75	Pyramid Technology	15.50	-0.75	-4.62
OTC	69.25	8.25	Sequent Computer Sys.	8.00	-0.25	-2.70
NYS	47.25	16.00	Silicon Graphics	37.50	-0.25	-0.66
NYS	68.00	14.63	Stratus Computer Inc.	68.00	3.50	7.04
OTC	68.63	15.00	Sun Microsystems Inc.	31.88	-1.88	-4.20
NYS	17.88	6.88	Tandem Computers Inc.	11.88	-0.25	-2.06
NYS	68.88	23.50	Tandy Corp.	13.38	-0.88	-2.73
OTC	25.00	9.75	Tandem	16.50	0.25	1.37
NYS	6.88	1.88	Ultimate Corp.	4.50	-0.13	-2.70
NYS	10.25	1.75	Unisys Corp.	4.50	0.75	20.00
ASE	9.75	2.00	Wang Labs Inc. (b)	3.00	-0.25	-7.69
Software & DP Services					Up 0.02	
OTC	83.00	17.00	Adobe Systems Inc.	57.75	3.25	6.00
OTC	12.25	3.50	Ascop	4.13	0.00	0.00
OTC	58.88	20.25	Atlus Corp.	37.00	-2.25	-5.75
OTC	68.50	12.00	American Mgmt. Systems	18.88	-0.50	-2.50
OTC	17.25	7.50	American Software Inc.	10.75	-2.50	-18.87
NYS	4.50	1.88	Anacomp Inc.	2.50	-0.25	-8.57
OTC	16.25	10.00	Analysts Int'l	13.75	0.25	1.35
OTC	10.63	4.88	Ashton Tate	10.00	0.50	5.23
OTC	10.25	4.00	ASK Computer Sys.	8.00	-0.38	-4.00
OTC	3.88	0.88	Atlantic Research	1.00	0.00	0.00
OTC	8.00	2.00	Autodesk Inc.	5.38	0.25	4.88
OTC	8.38	2.00	Autologic Inc.	2.00	0.00	0.00
OTC	8.00	2.00	Automatic Data Processing	68.25	-0.25	-0.75
OTC	30.25	12.00	Autotrol Inc.	25.25	0.25	0.99
OTC	47.25	17.75	BMC Software Inc.	47.00	1.88	3.30
OTC	16.25	8.75	Boole & Babbage Inc.	10.88	0.25	2.47
OTC	64.25	14.38	Borland Int'l	50.75	1.75	3.56
NYS	3.63	0.44	Businessland Inc.	0.94	0.00	0.00
OTC	30.88	5.13	Cognos Inc.	15.88	-1.50	-8.63
NYS	11.13	4.88	Computer Associates	9.13	0.88	4.29
OTC	17.75	9.50	Computer Horizons	11.88	0.13	1.06
NYS	73.25	38.75	Computer Sciences	55.50	-1.13	-1.99
NYS	11.25	6.30	Computer Task Group	7.38	0.00	0.00
OTC	29.75	13.00	Cornshare Inc.	16.00	-1.75	-9.43
OTC	13.50	3.75	Corporate Software	13.88	0.50	4.21
NYS	61.25	27.88	Electronic Data Sys.	61.25	0.88	1.74
OTC	16.75	7.25	Gist Systems Int'l	13.75	0.00	0.00
OTC	7.00	1.88	Hogan Systems Inc.	5.00	0.50	9.09
OTC	69.38	7.75	Information Resources	69.25	1.25	0.18
OTC	8.75	2.50	Informix Corp.	6.50	0.31	5.04
OTC	4.75	1.25	Intellicorp Inc.	3.13	0.00	0.00
OTC	8.25	2.50	Interleaf Inc.	6.25	0.00	0.00
OTC	16.25	6.00	Intersolv	6.88	-1.00	-12.75
OTC	43.25	10.00	Knowledgeware Inc.	29.50	0.00	0.00
OTC	45.00	16.75	Legent Corp.	22.50	-1.88	-9.25
OTC	38.50	12.30	Lotus Development	33.00	-1.00	-2.94
OTC	32.00	10.25	Management	11.25	0.75	7.14
NYS	30.75	23.88	Microsoft Corp.	80.75	7.50	10.24
NYS	10.50	4.00	On Line Software Int'l	8.50	-0.88	-9.00
OTC	15.75	4.88	Oracle Systems	10.25	1.00	10.81
NYS	13.25	7.00	Parasitic Systems	8.75	-0.13	-1.27
NYS	10.00	1.25	Phoenix Technologies	8.13	0.38	4.29
NYS	52.00	33.38	Policy Management Sys.	48.88	-0.50	-1.00
NYS	22.75	11.50	Reynolds & Reynolds	20.38	0.00	0.00
OTC	37.25	14.75	SEI Corp.	28.50	0.00	0.00
OTC	22.88	13.00	Shared Medical Systems	21.13	-0.63	-2.87
OTC	68.25	12.00	Software Publishing Corp.	16.00	1.25	8.47
NYS	14.63	8.50	Sterling Software	13.75	0.88	7.37
OTC	21.25	9.50	Sungard Data Sys.	16.88	-0.13	-0.74
NYS	69.88	17.75	Symantec Corp.	51.50	1.25	2.49
NYS	13.38	4.88	System Center Inc.	8.88	-0.13	-1.47
OTC	37.25	12.50	System Software Assoc.	14.50	-1.25	-7.94
OTC	16.75	4.75	Wallek	7.25	-0.75	-9.38
Semiconductors					Dn 1.56	
NYS	14.25	3.63	Advanced Micro Devices	11.13	-0.88	-9.89
NYS	12.50	6.50	Analog Devices Inc.	8.00	-0.63	-7.25
NYS	16.00	6.25	Brooks & Technologies	8.00	0.00	0.00
OTC	68.25	38.00	Intel Corp.	48.13	-1.13	-2.28
NYS	13.50	6.13	LSI Logic Corp.	7.13	-0.63	-8.09
NYS	16.13	6.75	Micron Technology	12.75	-0.75	-5.56
OTC	20.88	7.88	MIPS Computer Systems	11.50	-0.88	-7.07
NYS	75.88	68.75	Motorola Inc.	84.88	-1.25	-1.98
NYS	6.38	3.00	National Semiconductor	5.20	-0.50	-8.16
NYS	67.20	22.50	Texas Instruments	21.88	-2.00	-8.50
OTC	12.25	4.00	VLSI Technology	8.50	-1.38	-17.46
ASE	11.13	3.13	Vitesem Digital Corp.	3.88	0.00	0.00
Peripherals & Subsystems					Dn 1.78	
OTC	2.75	0.88	Aperture Technologies	1.88	0.00	0.00
OTC	16.00	7.80	Benchec Inc.	12.75	0.25	2.00
OTC	17.50	8.25	Cambex Corp.	16.20	0.75	4.76
ASE	11.75	4.13	Cognitronics Corp.	8.00	-0.38	-4.00
NYS	31.25	14.63	Conner Peripherals	21.13	-1.13	-9.00
ASE	17.50	7.00	Data-rem Corp.	11.00	0.63	6.03
NYS	13.00	4.25	EMC Corp.	8.80	-0.25	-2.70
NYS	47.25	38.75	Eastman Kodak Co.	40.50	-0.13	-0.31
OTC	11.25	4.75	Emulex Corp.	6.75	-0.50	-6.90
OTC	30.25	14.00	Evans & Sutherland	17.75	-1.88	-8.58
OTC	8.50	3.88	Iomega Corp.	5.13	-0.25	-4.65
OTC	28.25	8.75	IPL Systems Inc.	18.88	-0.88	-4.69
OTC	1.88	0.13	Maxtor Systems	0.63	-0.13	-16.87
OTC	10.25	1.63	Maxtor Corp.	2.81	-0.06	-2.18
OTC	10.00	4.88	Micropolis Corp.	7.88	0.50	7.14
NYS	87.88	73.63	3M Corp.	87.13	0.75	0.87
OTC	11.25	6.00	Prometrix Inc.	7.50	-0.25	-3.23
NYS	24.75	9.50	QMS Inc.	22.25	-0.88	-3.73
OTC	18.25	8.25	Quantum Corp.	10.88	-0.88	-7.45
NYS	7.63	4.88	Recognition Equipment	6.75	0.88	0.88
OTC	11.60	4.00	Reson Inc.	8.50	0.13	1.49
OTC	10.25	1.63	Seagate Technology	8.25	-0.50	-5.71
NYS	61.88	11.50	Storage Technology	47.25	-0.75	-0.50
NYS	4.75	1.25	Tandon Corp.	2.50	-0.16	-9.09
NYS	30.88	11.63	Tektronix Inc.	68.13	-1.75	-2.50
NYS	68.88	22.25	Telemotion Systems	8.25	0.00	0.00
NYS	60.13	29.00	Xerox Corp.	68.13	-0.13	-0.23
Leasing Companies					Dn 3.63	
OTC	16.25	7.00	Amplicon Inc.	14.75	-0.25	-1.67
NYS	28.88	14.30	Comdisco Inc.	21.00	-0.88	-4.00
OTC	14.20	6.88	LDI Corporation	12.50	0.50	0.20
OTC	4.50	2.25	Selectarm Inc.	3.50	-0.50	-12.50

IBM's outsourcing unit scores

BY CLINTON WILDER
CW STAFF

TARRYTOWN, N.Y. — IBM's outsourcing subsidiary scored three impressive victories last week, helping to rebuild its momentum as an outsourcing player to be reckoned with after a slow 1990.

In the most extensive of three deals that an IBM spokesman said are worth "several hundred million dollars," IBM's Integrated Systems Solutions Corp. (ISSC) will provide extensive applications development work as well as mainframe processing to Supermarkets General Corp. of Woodbridge, N.J.

Software development has long been the province of outsourcing competitors Electronic Data Systems Corp. and Andersen Consulting, but the spin-off of IBM's outsourcing business into ISSC in May freed IBM to offer those services. Before that, IBM said such services might have run afoul of the 1956 Consent Decree imposing limits on IBM's business.

The other two contracts call for ISSC to provide processing and disaster-recovery services to Dallas-based grocery and drug store chain Cullum Cos. and San Francisco-based shipping firm Matson Navigation Co. In all three deals, the customer will shut down its mainframes and run data at a remote ISSC site.

"We're pretty confident in this decision," said James Dawson, senior vice president of administration and systems at Cullum. "I don't know why, but you just get a little more confidence level with IBM."

ISSC will hire 150 of Supermarkets General's 175 information systems employees, its largest employee transfer since the landmark IBM/Eastman Kodak Co. contract of 1989. The other 25 employees will remain at Supermarkets General.

The wide-ranging contract with Supermarkets General calls for ISSC to develop business, purchasing, warehousing and in-store applications; revamp point-of-sale and scanning technologies; and provide electronic data interchange links with suppliers.

"We know what we need, but [ISSC] knows how to write code and get it down to implementable form," said Harvey Gutman, vice president of retail development at Supermarkets General.

The $6 billion grocery chain, owner of Pathmark and other stores, will shut down its 3084Q and 3081K mainframes in Woodbridge and transfer processing to an ISSC data center in Dayton, N.J. A source close to the company said EDS had also bid for the contract.

Under the 10-year contract, Cullum will also upgrade its systems, scrapping its 4381 running DOS/VSE under VM to run its applications on an Enterprise System/9000 at an ISSC data center in Lexington, Ky.

Matson Navigation will move processing from its 3090 Model 180S in San Francisco to ISSC's data center in Boulder, Colo. "We just don't consider processing to be strategic, so we were looking for a more cost-effective approach with a third party," said Dale Hendler, vice president of corporate development.

No Matson employees will go to ISSC, but the firm eliminated approximately 12 positions by outsourcing, a spokesman said.

ISSC deals

SUPERMARKETS GENERAL CORP.
Woodbridge, N.J.-based grocery story chain
1990 revenue: $6.1 billion.
Terms: Processing transferred to Dayton, N.J.; ISSC to hire 150 IS employees; provide operations, applications development and other services.

CULLUM COS.
Dallas-based grocery/drug store chain
1990 revenue: $1 billion.
Terms: Processing transferred to Lexington, Ky.; ISSC to provide operations, disaster recovery and order-entry support.

MATSON NAVIGATION CO.
San Francisco-based shipping firm
1990 revenue: $550 million.
Terms: Processing transferred to Boulder, Colo.; ISSC to provide operations, network support and disaster recovery.

Moves stir speculation on Prime's future

BY SALLY CUSACK
CW STAFF

NATICK, Mass. — A cloud of unrest hanging over Prime Computer, Inc. for several weeks took some shape last week. Prime announced high-level management changes that insiders said will lead to an imminent separation of the Computervision arm of the company from the traditional Prime minicomputer division.

Richard B. Snyder, president of Prime's Computer Systems Business Unit, was replaced by Neil McMullan, formerly managing director of Prime's UK subsidiary. Snyder will take on more of a development-oriented role involving the 50 series processors, while McMullan is likely to focus on improving customer relations.

The change of command occurs at a time when the financially troubled company is the subject of industry speculation about a possible merger or acquisition.

Analysts have also suggested that the privately held company may be preparing to go public. Prime is owned by venture capitalist J. H. Whitney, which rescued it in 1989 from a hostile takeover attempt by MAI Basic Four, Inc.

Bruce Jenkins, vice president at Daratech, Inc., a Cambridge, Mass.-based consulting firm, noted that Whitney has always discussed the business prospects and futures of the two Prime business units as if there were little or no overlap between the two organizations.

Jenkins added that it would not surprise him if Whitney's ultimate choice was to take the company public again.

Prime's McMullan *to focus on customer relations*

McMullan denied speculation that his appointment was a precursor to large-scale structural changes at Prime.

"I'm here to do some things with the dual-rail strategy on a worldwide basis," McMullan said. Dual rail is Prime's strategy to produce Unix-based systems while upgrading the existing 50 series boxes.

McMullan added that part of that plan includes changes in the European and Asian marketplace to put more focus on Prime customers.

He reiterated Prime's commitment to 50 series customers in terms of continued upgrades, new systems and support.

NEWS SHORTS

Intel networking splash due

Intel Corp. is getting serious about networking. A source within the company said Intel will introduce 23 communications products — hardware and software — on Sept. 4. Another source expects a lot of leading-edge and aggressively priced products. Other sources briefed by Intel said the emphasis is being placed on network management down to the client level, with the ability to pinpoint problems. Also expected by some is a sort of dual-purpose board, featuring either support for Novell, Inc.'s Netware and IBM's OS/2 LAN server or a system board with support for Ethernet and Token Ring built in.

D&B Software adds groupware

Continuing on its charted course to provide client/server products to its customers by year's end, Dun & Bradstreet Software announced last week that it has acquired the rights to the Wijit user-enabling groupware. The technology will be incorporated into the D&B Software client/server products, and it will enable users to automate front-office functions. The Wijit application was developed by John Landry, D&B Software's Executive Vice President, prior to his joining the company. He developed the application in conjunction with Thomas Malone, a professor at MIT.

Keeping information handy

Atlantis space shuttle astronauts circling the globe last week were assisted by Wristmacs, digital wristwatches that store and display mission information that has been downloaded from Apple Computer, Inc. Macintosh computers. The watches, which were programmed prior to launching, alert the crew to Earth observation photo opportunities. They can also be updated during the flight by radio link to a portable Macintosh on the shuttle. Wristmacs are produced by New York-based Ex Machina, Inc.

Staff cut at Software Publishing

Software Publishing Corp. has announced a 6% cut in its worldwide work force. Approximately 45 employees were released last week from the Mountain View, Calif., personal computer software vendor. The cut was made because of a recent corporate reorganization and unexpectedly slow revenue growth, according to the company.

Airline price-fixing suit expanded

A major antitrust suit, which alleges that nine U.S. airlines have used an electronic tariff database to engage in price-fixing, got even bigger last week. U.S. District Judge Marvin H. Shoob in Atlanta agreed to turn the 1990 suit filed by some 40 individuals and businesses into a class-action suit that covers approximately 12.5 million airline passengers. Edward Krugman, an attorney for Delta Airlines, Inc., said that the action makes the suit "unmanageable as well as unfounded." So far, the United States Department of Justice's study of possible price-signaling on the tariff database has reached no conclusions [CW, June 9].

Equitable's loss is Macmillan's gain

Louis B. Hughes, formerly senior vice president for information technology at the Equitable Insurance Cos. in New York, has joined The Maxwell Macmillan Group, a New York-based publishing and information services concern. Among Macmillan's products is the Official Airline Guide. "It was an outstanding opportunity," said Hughes, who works at Macmillan's executive offices in Greenwich, Conn.

BIS names Bear as new chief

BIS Strategic Decisions will be working in a perpetual bear market with the appointment of John P. Bear as president and chief executive officer. Bear will take over from Charles A. Peako Jr., who founded the Norwell, Mass.-based research firm in 1979. Peako will continue as a member of the board of directors.

Unisys opens net management

Software upgrade provides 1100/2200 with native OSI, TCP/IP support

BY ELLIS BOOKER
CW STAFF

BLUE BELL, Pa. — Pressed by a dismal market for its products and the open systems emphasis of its own enterprisewide computing architecture outlined last year, Unisys Corp. has quite an incentive for delivering innovative open systems.

Last week, the topic was networking.

Unisys unveiled software that brings native Open Systems Interconnect (OSI) and Transmission Control Protocol/Internet Protocol (TCP/IP) support to its 1100/2200 series mainframes and communications processors.

The company also announced a Unix-based network management system that complies with the OSI model.

While Unisys' Distributed Communications Processors (DCP) have supported TCP/IP for some time, they have done so through gateways, converting between open protocols and Unisys' proprietary Distributed Communications Architecture (DCA) networking scheme. The new version eliminates that extra processing.

Significantly for users, the OSI, TCP/IP and proprietary DCA sessions can share a single physical channel. In addition, a new communications product for Unisys' DCPs enables them to act as X.25 packet switches, with other X.25 devices attached to them.

Both pieces of communications software will be included in the basic software on the 2200 mainframe and the DCP. Previously, such enhancements were sold as separate products. However, the X.25 product is still extra, priced at $2,630 to $7,970.

Both upgrades begin shipping later this month.

On the network management front, Unisys unveiled a Unix-based, object-oriented network management system.

In its first release, Common Network Management System (CNMS) will be available to control Unisys' proprietary DCA protocol. A version able to manage TCP/IP networks will be announced next year, according to Unisys. The product currently complies with OSI's Common Management Information Protocol standard for network management.

CNMS requires two of Unisys' U 6000 Unix servers. One server controls and monitors network clients; the other handles network servers. Network administrators access the two servers over industry-standard X terminals. An Oracle Corp. relational database is used as the repository for network objects such as computers, terminals, multiplexers or programs.

CNMS can also communicate with AT&T's Accumaster Integrator via Accumaster's alarm interface.

Unisys executives said they will provide a kit in a second release of the product for developing agents to convert among network management systems of other vendors.

CNMS Release 1 will be available in December. A typical system configuration costs approximately $140,000 for both hardware and software. Release 2, which adds Simple Network Management Protocol support, is set to be announced in 1992.

Two in the bag

It was a welcome week of good news for Unisys. The struggling company won both a $275 million contract with the Federal Aviation Administration to upgrade air traffic control systems at FAA sites nationwide and an award to supply Kmart Corp. with 1,500 Unix servers.

The FAA deal, signed with a part of Unisys' Defense Systems Group, is an extension of the $45 million contract signed with the FAA in September 1989 for the Automated Radar Terminal System, or ARTS IIIA.

Unisys Defense Systems also won an $87.7 million contract with the FAA to place upgraded air traffic control systems at 130 small and midsize airports.

At Troy, Mich.-based Kmart, Unisys retained its role as supplier of the retail giant's in-store Unix processors for its Kmart Information Network II, known as KIN II. Kmart has already deployed nearly 600 of the initial 1,000 systems it bought from Unisys last year. Unisys will install up to 1,200 of its U 6000/65 multiprocessor systems by the end of 1992.

ELLIS BOOKER

SQL rewrite

FROM PAGE 1

SQL*Net product faces beta tests at user sites. However, one person close to the development effort said the original plan was for a mid-September debut.

Users at some large Oracle shops have been expecting the revised SQL*Net code to arrive before Oracle Version 7.0 starts to ship in 1992 because the new version would have to support Version 7.0's distributed database architecture. The same users said they expect Oracle to announce that Version 7.0 has entered the beta-test phase at the International Oracle Users Group meeting in Miami, which starts Sept. 29. Oracle spokespersons would not comment on the SQL*Net announcement.

SQL*Net allows multiple copies of the Oracle relational database to communicate over enterprisewide networks, even connecting Oracle databases that run on different types of computer hardware. Users said that when SQL*Net is working well, it can be like flipping a light switch. When it does not work well, users said, it can drag system performance down noticeably.

"We have run into a few problems with SQL*Net at our site, and we've been told by Oracle support people that changes would be coming along soon," said David Kreines, project manager at the Educational Testing Service in Princeton, N.J., and former president of the International Oracle Users Group. "The new code is supposed to be slightly faster and to generate less network traffic."

Some industry analysts also expect the new SQL*Net code to surface soon. "My personal opinion is that they will deliver SQL*Net as part of the user-group meeting in late September," said Donald Feinberg, a program director at Gartner Group, Inc.'s Software Management Strategies service in Santa Clara, Calif. "But Oracle wouldn't brief us on it, which means the announcement could be as much as two months away."

Improved performance

Feinberg said the features supported in the new SQL*Net release would probably include "dynamic" protocol-conversion tables, enhanced user transparency and improved performance.

"Users are looking for performance, ease of use and ease of installation," he added.

Some users want to get their hands on the new SQL*Net code as soon as possible. "I've heard about it," said Skip Rochford, a TRW, Inc. project manager who supports information systems activities at Hanscom Air Force Base in Bedford, Mass. "It's necessary [to change SQL*Net] because it makes the network more transparent to end users, and it provides better performance."

Hanscom uses SQL*Net to link multiple copies of Oracle 5.1 running on two production Digital Equipment Corp. Vaxclusters. Without the new version of SQL*Net, Rochford said, TRW programmers have had to do some "pretty ugly coding" to ensure network transparency.

Ferret lovers

FROM PAGE 1

often start their boards for just that reason. Larry Mitchell has been a currency collector, or numismatist, for 25 years. He also has an abiding interest in computers. The two worlds collided in December 1989 with the creation of Numisnet, a board dedicated to numismatics.

Mitchell said he was disappointed by the offerings on such commercial services as Compuserve. "I thought, 'What the heck! Why not combine two hobbies into one?' " The board now has about 300 regular callers.

Not all boards start out as a hobby, however. It was professional interest that spurred Bruce Lomasky to establish his board, Bruce's Bar and Grill, in Chicago nine years ago. Lomasky, a computer consultant, wanted to learn more about computer communications, and the board was an ideal test setting.

What started as an experiment has grown rapidly, however. The Bar and Grill now supports 40 phone lines, which are often crowded in the evenings as people use the board's specialty — on-line chatting, parties and matchmaking.

While many boards offer chatting as an option, relatively few promote it as the main attraction. "During the daytime, a lot of people are using files, but at night, it's not uncommon to have almost all 40 lines busy just with people chatting back and forth," Lomasky said.

Some board browsers are more interested in talking about their pets. Chicago Syslink, run by sysop George Matyassek, has one of the more unusual pet discussion groups — the Ferret Forum. Users can post and read messages about ferrets and ferret-related events, such as the Greatest Ferret Show on Earth. (Classes for geriatric and handicapped ferrets will be included. No stud service will be permitted in the show hall.)

Boards dealing with more common pets abound. Norm and Fran Saunders, who met through a bulletin board, run The Osprey's Nest, a board dedicated to bird lovers. The board has about 1,200 registered users, with 500 of them dialing up weekly. Saunders said he has received calls from 43 states and six Canadian provinces.

Long-distance callers are even more common on Klaus Bender's Deadboard in Bigler-ville, Pa. He estimated that nearly all of his 300 to 400 registered users make toll calls to receive Grateful Dead tour information and discuss Deadhead topics.

People often graduate to using small bulletin boards after cutting their teeth on large systems such as Prodigy and Compuserve, Rickard said. Then, too, there is the cost. "The classic is the first $300 bill comes in from Compuserve, and there's a fight on the home front, and they move to bulletin board systems," he said.

As hardware prices drop, setting up a board will become less expensive, which should encourage the creation of even more boards. Even now, a board can be up and running on as little as an IBM PC XT-compatible, a 2,400 bit/sec. modem, a phone line and some bulletin board software — all of which could be purchased for $600 or less.

Something for everyone

A sampling of special interest electronic bulletin boards

Bulletin board name	Focus of discussion, interests	Telephone number
• The Audiophile Network	Audiophiles, high-end stereo equipment	(818) 988-0452
• Bruce's Bar and Grill	On-line chatting and discussions	(203) 236-3761
• Chicago Syslink	Ferret owners	(312) 622-4442
• Int'l Collectors Network	Antiques, collectibles	(213) 284-8646
• Computer Garden	Treasure hunting, metal detecting	(301) 546-1588
• Dead Board	Grateful Dead information	(717) 477-9573
• Minnesota Spacenet	Up-to-date NASA information	(612) 920-5566
• Osprey's Nest	Bird-watchers	(301) 989-9086
• Word and Randy's	(First PC bulletin board. Started Feb. 16, 1978)	(312) 545-8086
• Numisnet	Currency collectors	(301) 498-8285
• Snafu BBS	Advice for government whistleblowers	(202) 547-4230
• SF Net	Runs CD Exchange. Puts PCs in coffeehouses for patrons	(415) 824-8747

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Healthy Storage Tek buys into midrange

BY ELLIS BOOKER
CW STAFF

LOUISVILLE, Colo. — Storage Technology Corp., seemingly recovered from its financial woes of the mid-1980s, made a strategic acquisition last week, announcing it would buy ailing IBM midrange reseller XL/Datacomp, Inc. in Chicago for $150 million in stock.

Rumors of the merger had been circulating for weeks [CW, July 22].

The move is preliminary to the announcements of midrange products within the next year to 18 months, Storage Tek executives said. Recently, the 19-year-old firm, based here, has made abundantly clear its desire to expand into the midrange.

In addition to providing an immediate presence in the $20 billion IBM midrange market in the form of a trained 120-person sales force from 60 U.S. offices, the deal flags Storage Tek's return to financial health.

The peripherals company fought its way back from bankruptcy between 1984 and 1987, after it failed in its attempt to expand its core business of data center storage and retrieval subsystems for high-performance computers. Storage Tek had to retreat from an expensive strategy of building its own line of IBM-compatible mainframes and optical storage subsystems.

"We believe there will be a synergy between XL/Datacomp's experienced sales and support force and Storage Tek's manufacturing and research and development capabilities," said Storage Tek Chairman and Chief Executive Officer Ryal Poppa in a prepared statement.

"They obviously feel they now have enough resources to make acquisitions they feel are strategic," said Bob Katsive, vice president at Disk/Trend, Inc. in Mountain View, Calif.

Indeed, while Storage Tek has made clear its desire to enter the midrange market, it has few products to show so far.

For example, in April, the company said it would deliver in mid-1992 a new family of high-end direct-access storage devices based on a fault-tolerant, advanced array architecture.

That storage subsystem, code-named Iceberg, will include a complementary version for midrange environments, a Storage Tek spokesman said.

A Storage Tek spokesman also said the deal moves the company forward in the networking market, in which neither it nor XL/Datacomp has a presence. Spokesman David Read said Storage Tek is looking at "connecting midrange and host systems for enterprise computing" and is busy developing a networking expertise.

"You don't think of them in connection with networking," Katzive said. "But maybe they have another strategic alliance in mind."

For financially strapped XL/Datacomp, a merger seemed inevitable, analysts said.

Once the biggest reseller of Application System/400s (behind IBM), XL/Datacomp has faced sharply declining revenue since December, when it ceased to be an IBM industry remarketer and so lost its access to discounts for new IBM systems.

In the proposed transaction, unanimously approved by the boards of both companies last week, XL/Datacomp will become a Storage Tek subsidiary and will continue to operate under its current management.

Storage Technology, Inc.
Chairman: Ryal Poppa

Founded: 1969
Headquarters: Louisville, Colo.
1990 revenues: $1.14 billion
Number of employees: 9,100
Core business: Information storage and retrieval subsystems for data centers

XL/Datacomp, Inc.
Chairman: Tom Owens

Founded: 1979
Headquarters: Hinsdale, Ill.
1990 revenues: $450 million
Number of employees: >1,000
Core business: Sales and support of midrange computer systems, consulting, applications software and disaster recovery services

Source: Company reports

CW Chart: Janell Genovese

DEC war

FROM PAGE 1

resellers said.

"What used to be a reasonable path for upgrade is now priced at a premium," said Andy Farris, vice president at Universal Digital, Inc., a DEC reseller in Minnetonka, Minn.

"Over the last year, DEC has definitely been plugging up more gaps that provided niches that allowed us to operate," said C. D. Smith, president of C. D. Smith and Associates, Inc., a DEC reseller in Houston.

Some users have also reported delays of 30 to 60 days in getting the proper DEC licensing paperwork — a process that is supposed to take two weeks. DEC officials responded last week that such delays were rare and were sometimes the fault of the dealers as well.

In the $25 billion used-equipment market for all computer vendors, DEC goods account for a 9.7% segment worth about $2.4 billion, according to figures compiled by Gartner Group, Inc. and the Computer Dealers and Lessors Association. Annually, the trading activity in used DEC equipment amounts to about $700 million, Gartner estimated.

When a customer upgrades directly through DEC, as the majority of users still do, the upgrade price bundles the hardware and operating system cost. Only customers upgrading through the secondary market would pay DEC the VMS upgrade prices posted on the Electronic Store.

The plummeting value of used VAX 6000s is a "combination of aggressive discounting by DEC and upgrade prices that make it unattractive to upgrade via the secondary market," said Karlyn Kilroy, an analyst at Technology Investment Strategies Corp. in Framingham, Mass. "For users trying to unload equipment, that's bad news."

For those in the market to buy, however, the story changes.

"This value decline is pure good news for users, particularly for those who are committed to DEC platforms for the long term," said Mark Specker, a senior research analyst at Stamford, Conn.-based Gartner. One catch is that systems bought today — particularly low-end VAX 6000s — will decline drastically in resale value over the next year or two.

The rumored debut of the next generation of VAX 6000s, the Model 600s, has now been moved up to this fall instead of early next year. That further weakens the staying power of midrange prices, analysts noted.

In the face of an increasingly busy market for used VAXs, DEC spent the last several months quietly struggling to establish consistent policies for VMS upgrade licensing. Salespeople used to set those individually for each customer account or simply move the license for no charge. So users and resellers were outraged last year when DEC declared it would start charging full price for an upgraded VMS license on used machines.

Joseph Unsworth, MIS manager at Aquafab Industries, Inc. in East Greenwich, R.I., was one user who ran afoul of DEC's newly aggressive policies by upgrading through a third party rather than DEC. "We had a big issue with them because of our upgrade, but the savings between the hardware and license upgrade were worth the little bit of aggravation we had," Unsworth said last week.

Since then, relations have smoothed out between DEC and his company. "If the price is right, I'd gladly do an upgrade with DEC," the IS manager said.

Restructuring leaves Pan Am staff at gate

BY KIM S. NASH
CW STAFF

NEW YORK — Although Pan American World Airways laid off more than 40% of its 500-person information systems work force last week, daily operations at the financially troubled airline will not be affected, said Paul Lawrence, vice president of IS.

However, the company has canceled all computer system enhancements and other planned projects, including a proposed outsourcing contract that was floated in early April but received no takers [CW, July 15].

"We have kept the minimum required people to continue smooth operations," Lawrence said.

Under a business plan announced last week, Pan Am cut approximately 25% of its total staff of 22,000 workers. According to Lawrence, personnel were laid off equally from each of Pan Am's three major IS departments: communications, applications development and data center operations.

Delta Air Lines has tentatively agreed to absorb 6,000 Pan Am workers as part of a recent proposal to buy several Pan Am routes, but the 209 IS staff members who lost their jobs last week are "unlikely" to find employment at Delta, Lawrence said.

Delta cannot hire any dismissed Pan Am people until the federal bankruptcy court here decides which of several reorganization plans submitted by Pan Am is best for the failing company, he added.

"There's no guarantee Delta will take on those people," Lawrence said. The court and a committee of Pan Am's creditors are expected to decide today which plan to accept.

Pan Am filed for Chapter 11 bankruptcy protection in January. Since then, the company has accepted preliminary agreements with United Airlines, a division of UAL Corp., and Delta to sell various foreign and domestic flight routes.

The 209 IS people who lost their jobs will be able to interview with "eight or nine large New York/New Jersey-area companies" that have signed on for a Pan Am-sponsored job fair to be held at company headquarters here Wednesday, according to Lawrence. He would not name the participating companies.

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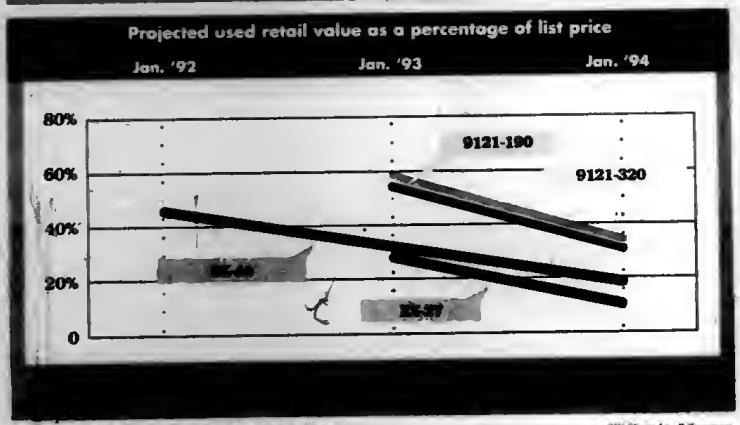
TRENDS

IBM HDS

Model	Announced	Configured list price	Projected retail residual value Jan. '92	Jan. '93	Jan. '94
HDS EX-27	11/90	$545,000	New*	$147,150	$70,850
IBM 9121-190	9/90	$592,273	New*	$325,750	$183,605
HDS EX-44	3/90	$1,424,000	$640,800	$455,680	$256,320
IBM 9121-320	9/90	$1,487,273	New*	$862,618	$505,673

	EX-27	9121-190	EX-44	9121-320
Number of MIPS	8.2	7.52	21.0	20.21
Price per MIPS	$66,463	$78,760	$67,810	$73,591



Source: Technology Investment Strategies Corp., Framingham, Mass.

CW Chart: Janell Genovese

NEXT WEEK

The Sphinx, one of the ancient world's seven wonders, is being scrutinized more closely than ever thanks to computer technology. Researchers have created a three-dimensional computer model of the Sphinx that enables them to study the impact of air pollution and other modern-day environmental hazards on the famed monument.

More Inside

Full-fledged cooperative processing won't be possible until the turn of the century. But IS managers don't have to sit around twiddling their thumbs waiting for it. By understanding how cooperative processing technology is unfolding, they can take advantage of those pieces available now and lay the groundwork for future developments.

INSIDE LINES

The 1-2-3 for Windows watch

▶ As the end of summer draws near, the thoughts of Lotus' 1-2-3 users turn to the promised delivery of a Windows version. We've got two conflicting reports: Two sources say they've heard scheduled delivery dates have slipped into September or October. One of them cites irregularities involving printing and data loss. Yet a third source says his latest beta-test version, which is a few weeks old, still has a few bugs. An early fall shipment would not surprise this user. Then again, another source reports that the shipping party is slated for sometime during the next few weeks, which means the product should be on its way into manufacturing and out the door by the end of the month.

Tool kit on the way

▶ Microsoft will soon ship most of the software tool kit designed to ease users out of 3Com's 3+Open network operating system and into Microsoft's LAN Manager. A source says "roughly 85%" of what is required to connect all 3+Open systems to Microsoft's Version 2.1 LAN Manager will be delivered this month. Version 2.1 is scheduled to be shipped later this year. 3+Open, which was officially discontinued about eight months ago, is based on LAN Manager. The source says an unusually large beta-test program — involving "at least 100 users" — is being conducted on the first tool kit.

Men in glass houses

▶ William Tauscher, chairman of Computerland, couldn't resist a bit of gloating over Businessland's need to be acquired. "I definitely feel some satisfaction from it," he acknowledged. When Tauscher took over Computerland 3½ years ago, its survival was in question, and Businessland's Dave Norman was one of those who publicly crowed about his success at Computerland's expense.

Vender giveth and vender taketh away

▶ True to its word, Wang will be delivering new technology to its VS user base as early as next week, when it rolls out the VS 6000. The machine is a low-end system positioned for users wishing to upgrade from a VS 5000 but not quite ready for the VS 8000. On the downside, Wang's next-generation high-end VS computer, code-named Mercury, will not go into beta testing this month, as originally promised. Sources say delivery of the box may be pushed back beyond the anticipated early 1992 announcement.

High noon on the Electronic Frontier

▶ Two legal battles are expected to heat up the electronic frontier within the next few weeks. The U.S. government is expected to file its response to a lawsuit lodged against law enforcers in the U.S. Department of Justice, the U.S. Secret Service and a security chief at Bellcore. The suit, which cites a variety of First- and Fourth-Amendment violations, was filed by the Electronic Frontier Foundation in May [CW, May 6]. There is also an outside chance that the Supreme Court will say whether it plans to hear the Robert T. Morris case. Remember him? He's the ex-Cornell University computer science student who dropped a worm into the Internet in November 1988.

We have seen the future, and it is pens

▶ Almost unnoticed at Pen Computing 1991 late last month were several Grid Systems prototypes. One was running a special flash memory drive with a 4M-byte flash card from Sun Technologies. Two other Grid boxes sported radio frequency capabilities.

A few weeks back, we noted that a recent issue of a West Coast computer magazine contained an advertisement by a Los Angeles firm that was selling copies of the Jerusalem virus for about $30 apiece. Since then, several readers have called to express outrage at what they said is an irresponsible way to make a buck. Last week, a caller from Intel said the firm's legal department is mulling over ways to force the virus marketer to stop. If you have other tales of creative entrepreneurship or simply a good tip to pass along, get in touch with Executive Editor Paul Gillin toll-free at (800) 343-6474, fax it to (508) 875-8931 or Compuserve it to 76537,2413.

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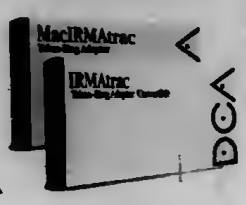

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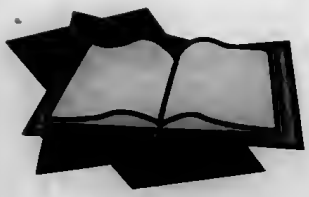

IDC Study on UNIX OLTP
UNIX On-Line Transaction Processing at Multi-User UNIX Sites (January 1991) states that some 47.4% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.

About the TPC
The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bull, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.

Within the past five months, *every one* of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

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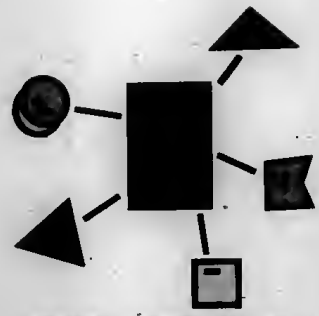

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The TP1 benchmark is no longer the accepted benchmark for measuring database performance. The new TPC tests establish more complete, thorough specifications than TP1, leading to more objective, verifiable results for comparing performance between hardware systems and software products. TPC Benchmark™ A measures OLTP processing performance. TPC Benchmark™ B—similar to a batch test—focuses on database throughput.

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